MARCH 16, 1940

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, RAND, LONDON. Telephone: TEMPLE BAR 7228 and 7229.

No. XI. OF VOL. I., 1940. LONDON, SATURDAY, MARCH 16, 1940. Pp. 104—Price 1s.
No. 6081. VOL. CCXXXVIII. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription: Inland £2 2s. Abroad £2 10s.

OXFORD MEDICAL PUBLICATIONS

SEE PAGE 2

PROBLEMS OF
ANÆSTHESIA
IN GENERAL PRACTICE.
By D. H. LUKIS, M.D., B.S.Lond.
Late Hon. Anæsthetist, South London Hospital; late Clinical Assistant, Ear, Nose, and Throat Department, Queen's Hospital for Children; Hon. Medical Officer, Kingston Victoria Hospital.
Demy 8vo. 7s. 6d. net (postage extra). 158 + vi pages.
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

In Two Volumes. SELECTED WRITINGS OF
JOHN HUGHLINGS JACKSON,
M.D., F.R.C.P., F.R.S.
I.—EPILEPSY AND EPILEPTIFORM CONVULSIONS.
II.—EVOLUTION AND DISSOLUTION OF THE NERVOUS SYSTEM: SPEECH: VARIOUS PAPERS: ADDRESSES AND LECTURES.
Edited by JAMES TAYLOR, M.D., F.R.C.P.
With the advice and assistance of GORDON HOLMES, M.D., F.R.C.P., and F. M. R. WALSHE, M.D., F.R.C.P.
Over 500 pages in each vol. Price 25s. net each; postage extra (inland 9d., abroad 10d.).
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

3rd Ed., fully revised, 852 pp., 816 Illustrations.
EMERGENCY SURGERY. 50s. net; postage 8d.
By HAMILTON BAILEY, F.R.C.S.
Bristol: John Wright & Sons Ltd. London: Simpkin Marshall Ltd.

Free to the Medical Profession on request. Cloth bound Ed. 5s.
ARTIFICIAL LIMBS.
"SOLVITUR AMBULANDO."
A Symposium on Prosthetic Achievement.
Pp. 72. 37 Coloured Plates.
"I congratulate you on this interesting, instructive, and artistic production. I consider it to be a very great addition to my library."—M.B., Ch.B., F.R.C.S.
J. E. Hanger & Co., Ltd., 7, Roehampton House, Roehampton, S.W.15.

ANATOMY IN THE LIVING MODEL.
By DAVID WATERSTON, M.A., M.D., F.R.C.S.E., F.R.S.E.,
Bute Professor of Anatomy at the University of St. Andrews.
276 pages. 74 Illustrations. 16 coloured plates. Price 15s. net; postage 9d.
". . . can be read and re-read by the student, general practitioner, the surgeon and physician."
—ST. BARTHOLOMEW'S HOSP. JOUR.
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

RADIOTHERAPY IN THE DISEASES OF WOMEN.
By MALCOLM DONALDSON, B.A. (Cantab.), F.R.C.S. (Eng.), M.B., Ch.B. (Cantab.)
Physician Accoucheur with Charge of Out-patients, St. Bartholomew's Hospital; Consulting Gynæcologist, Royal Northern Hospital, &c.
Demy 8vo. 148 pages. 11 Illustrations in the Text; 2 Plates, one in Colour. Price 7s. 6d. net; postage 6d.
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

WAR WOUNDS & AIR RAID CASUALTIES
Articles republished from the "British Medical Journal."
With Illustrations. Demy 8vo. 10s. 6d. net; postage 6d.
". . . a comprehensive survey . . . "—CLINICAL JOURNAL.
London: H. K. Lewis & Co. Ltd., 136 Gower Street, W.C.1

TREATMENT IN GENERAL PRACTICE
Articles republished from the "British Medical Journal."
Volumes I and II. Second Editions. Demy 8vo.
"THE MANAGEMENT OF SOME MAJOR MEDICAL DISORDERS."
Vol. I: 8s. 6d. net; postage 6d. Vol. II: 10s. 6d. net; postage 6d.
Volume III. "ANÆSTHESIA: SURGERY."
Demy 8vo. 10s. 6d. net; postage 6d.
". . . concise and well balanced . . . "—LANCET.
Volume IV. "SURGERY" (continued). IN THE PRESS.
London: H. K. Lewis & Co. Ltd., 136 Gower Street, W.C.1

OESOPHAGEAL OBSTRUCTION.
ITS PATHOLOGY, DIAGNOSIS AND TREATMENT
(including four chapters on Cancer of the Œsophagus.)
By A. LAWRENCE ABEL, M.S. Lond., F.R.C.S. Eng.,
Senior Assistant Surgeon, Royal Cancer Hospital.
Pp. 245. 132 Illustrations. 2 Col. Plates. 30s. net.
"Masterful and complete. . . . Cannot be too highly praised."
—SURG. GYN. AND OBSTET. JOUR.
Oxford University Press, Amen House, London, E.C.4.

Reissued at the reduced price of 10s. 6d. net; post. 6d. 113 Illus.
THE GENESIS OF CANCER.
A STUDY IN THE EFFECTS OF LYMPH STASIS.
By W. SAMPSON HANDLEY, M.S., F.R.C.S.
H. K. Lewis & Co. Ltd., 136, Gower-street, W.C.1.

SECOND EDITION.
UROLOGY IN WOMEN.
A HANDBOOK OF URINARY DISEASES IN THE FEMALE SEX.
By E. CATHERINE LEWIS, M.S. (Lond.), F.R.C.S. (Eng.), Surgeon to the Royal Free Hospital; Surgeon and Urologist to the South London Hospital for Women.
¶ "*This book should certainly make and keep for itself a place in urological literature.*"—LANCET.
Pp. viii + 100. With 4 Coloured Plates and 27 other Illustrations. Price 6s.; postage 5d.; abroad 9d.
Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2.

DISEASES OF THE THYROID GLAND
WITH SPECIAL REFERENCE TO THYROTOXICOSIS.
By CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).
Crown 4to. Fully illustrated. £3 3s. net.
Revista de Libros: "This book is the best clinical treatise which we possess to-day on the pathology of the thyroid. . . . The excellence of the text is generally enhanced by the illustrations."
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

Pp. 328 + xii. 12s. 6d. net.
INTRODUCTION TO
DISEASES OF THE CHEST.
By JAMES MAXWELL, M.D. (Lond.), F.R.C.P. (Lond.).
SEE PAGE 4.
Hodder & Stoughton Ltd., 20, Warwick-square, E.C.4.

NEW BOOKS ★ ★ J. & A. CHURCHILL LTD. ★ ★ NEW EDITIONS

JUST PUBLISHED. 21 Illustrations. 18s.
POISONS—Their Isolation and Identification
By FRANK BAMFORD, B.Sc., late Director of the Medico-Legal Laboratory, Cairo.
With a Foreword by Professor SYDNEY SMITH, M.D., F.R.C.P.

THE CARE OF YOUNG BABIES
By JOHN GIBBENS, M.B., M.R.C.P. Foreword by Sir ROBERT HUTCHISON, Bt., M.D., F.R.C.P. 8 Plates and 5 Text-figures
3s. 6d. Postage 4d. (*Just Published.*)

PATHOLOGY: An Introduction to Medicine and Surgery
By J. H. DIBLE, M.B., F.R.C.P., and T. B. DAVIE, M.D., M.R.C.P. 374 Illustrations, including 8 Coloured Plates. 36s.

THE MEDICAL DIRECTORY, 1940
Contains the names and addresses and full details as to qualifications, &c., of all British Registered Practitioners in London, the Provinces, Wales, Scotland, Ireland, Abroad and the Services, &c.
96th *Annual Issue.* 62,847 Names. 2,450 Pages. 42s.

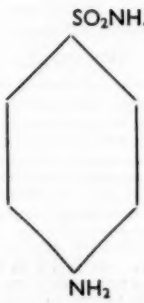
MINOR SURGERY AND THE TREATMENT OF FRACTURES
Revised by GWYNNE WILLIAMS, M.S., F.R.C.S.
New (Twenty-second) Edition. 283 Illustrations. 12s. 6d.

J. & A. CHURCHILL Ltd., 104 Gloucester Place, LONDON W.1

LIBRARY OF THE ROYAL CANCER HOSPITAL (FREE) APR 20 1940

A NEW CHEMOTHERAPEUTIC AGENT

'ALBUCID'



p-aminobenzenesulphonacetamide

For the peroral treatment of acute and chronic gonorrhœa and staphylococcal and coli-infections of the urinary tract

- low toxicity
- rapid absorption and elimination
- 7 days' treatment

Samples and Literature on request

Schering

SCHERING LIMITED

185/192, HIGH HOLBORN, LONDON, W.C.1

Valentine's Meat-Juice

In **Epidemic** and other **Diseases** of the **Tropics** in which there is great **Exhaustion,** excessive **Anæmia** and extreme **Irritability** of the **Digestive Organs, Valentine's Meat-Juice** demonstrates its **Ease of Assimilation** and **Power** in **Restoring** and **Strengthening.**

Albert Wilberforce Shepherd, *Glamorgan, Wales, Late District Medical Officer, Assam, India* : "I have used VALENTINE'S MEAT-JUICE in Assam, India, both in cases of Cholera and Dysentery and found it most efficacious ; and in Wales, both during and after an attack of severe Influenza. I have found that in the former the stomach retained the preparation when all other things failed, and that in the latter, my patients had far less of the weakness usually complained of."

For Sale by all Chemists and Druggists.

VALENTINE'S MEAT-JUICE COMPANY

A-35 RICHMOND, VIRGINIA, U.S.A.

MARCH 16, 1940

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6081 LONDON: SATURDAY, MARCH 16, 1940 CCXXXVIII

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ADDRESSES AND ORIGINAL ARTICLES

Dosage of Sulphanilamide in Prophylaxis of Wound Infections. By A. T. FULLER, Ph.D., and Major G. V. JAMES, M.Sc. (*with charts*) 487

Treatment of Epilepsy with Sodium Diphenyl Hydantoinate. By R. COOPE, F.R.C.P., and R. G. R. BURROWS, M.B. 490

The Hypophysis and Pancreatic Insulin. By H. P. MARKS, B.Sc., and F. G. YOUNG, D.Sc. (*with charts*) 493

Acute Suppurative Parotitis: Treatment by Deep X-ray Therapy. By A. J. C. LATCHMORE, F.R.C.S., A. A. D. LA TOUCHE, F.R.C.S., and H. S. SHUCKSMITH, F.R.C.S. 497

Subdural Hæmatoma. By W. LEES TEMPLETON, M.D. 499

REVIEWS OF BOOKS

Essentials of Medical Treatment. By Prof. D. M. Lyon, F.R.C.P.E. 503

Minor Surgery. By R. J. McNeill Love, F.R.C.S. 503

The Care of Young Babies. By John Gibbens, M.R.C.P. 503

Hereditary Ataxia and Spastic Paraplegia. By Julia Bell, F.R.C.P., assisted by E. A. Carmichael, F.R.C.P. .. 504

Demonstrations of Physical Signs in Clinical Surgery. By Hamilton Bailey, F.R.C.S. 504

Tumors of the Hands and Feet. Edited by Prof. G. T. Pack, M.D. 504

THE LANCET 100 Years Ago 513

LEADING ARTICLES

YOUNGSTERS IN THE FACTORY 505

BISMUTH BY MOUTH FOR SYPHILIS 505

MENIÈRE'S DISEASE 506

ANNOTATIONS

Rationing of Meat 508

A New Vasodilator 508

Orthoptists 509

Health Work of the League 509

The Eighteenth Century ... 509

Albuminuria of Effort 510

Sequelæ of Brain Injuries. 510

Crawford and Balcarres ... 510

CONTROL OF THE COMMON FEVERS

Scarlet Fever. Reviewed by Prof. JOHN E. GORDON (*to be concluded*) 511

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE: Section of Proctology: War Wounds of the Large Intestine 501

Section of Otology: Functional Deafness 502

SPECIAL ARTICLES

The E.M.S. Today and Tomorrow. By Sir JAMES WALTON, F.R.C.S. 514

Medicine and the Law: Defence of Coincidence of Name 513

IN ENGLAND NOW

Commentary from our Peripatetic Correspondents.. 516

NEW INVENTIONS

Uterine Drain and Dilator. By LOUISE MCILROY, F.R.C.O.G. (*illus.*) 504

LETTERS TO THE EDITOR

Use of Man Power in Medicine (Sir Charles Wilson, F.R.C.P.) 520

Peptic Ulcer in the Services (Dr. T. Izod Bennett) ... 520

The G.P. and the Voluntary Hospital (Dr. L. N. Jackson) 520

"Constructive Criticism" (Dr. F. M. R. Walshe) ... 521

Hemiplegia Complicating Hydantoinate Therapy (Dr. Donald Blair) 521

Pulmonary Embolectomy (Mr. F. Ronald Edwards, F.R.C.S.) 521

Control of Cerebrospinal Fever 522

100 Cases of Cerebrospinal Fever (Dr. G. Emrys Harries) 522

Lumbar Puncture in Cerebrospinal Fever (Pharmaceutical Specialities (May and Baker) Ltd.) .. 523

PUBLIC HEALTH

Cerebrospinal Fever (*with chart*)—Influenza and Pneumonia—Infectious Disease in England and Wales—Weil's Disease in Industry—Points from Annual Reports 518

PANEL AND CONTRACT PRACTICE

Revival of the R.M.O. Service—Reinstatements 519

OBITUARY

Richard James Lythgoe, M.D. (*with portrait*) 528

Harry Clifton Burgess, F.R.C.S.C. 528

Alfred George Wells, M.R.C.S. 529

Dr. Gunther 529

Dr. Ann Evans 529

PARLIAMENT

On the Floor of the House 523

From the Press Gallery: Children of School Age—Medical Care of the Royal Air Force 524

Question Time: Allocation of Hospital Beds—Inspection of Billets—Medical Boards—Mentally Unsound Soldiers—Health Officers and the R.A.M.C.—Tuberculosis on Tyneside—Pasteurisation of Milk—No Leprosy on "Altmark"—Medical Coördinating Committees—Quarters for A.T.S. .. 526

MEDICAL NEWS

University of Cambridge.. 527

National University of Ireland 527

University of Sheffield 527

Royal Faculty of Physicians and Surgeons of Glasgow 527

Royal Free Hospital..... 527

Beit Fellowship 527

New Maternity Wards at Stockport 527

The New Wing at St. Dunstan's 527

Worthing Hospital 492

Food and Drugs Act 529

NOTICES

Midwifery in the Solomon Islands 531

War-time Eating 532

A French Psychiatrist on Hitler 532

A Canadian Pioneer..... 529

A Steam Inhaler 532

Manchester Hospitals Board 532

A Simple Postural Drainage Bed 531

Serjeant-Surgeon..... 517

Medical Diary—Appointments—Vacancies—Births, Marriages and Deaths 530

THE MEDICAL DEFENCE UNION

ESTABLISHED 1885 EDGware 1373

MEMBERSHIP EXCEEDS 22,500

Annual Subscription £1 Assets exceed £100,000 Entrance Fee 10s.

No entrance fee to those joining within twelve months of registration

Full particulars from

The Secretary, The Medical Defence Union, Ltd., Bonnington, Stonegrove, Edgware

OXFORD MEDICAL PUBLICATIONS

Some Recent Press Comments :—

BLOOD TRANSFUSION

By **VICTOR H. RIDDELL,** M.D., F.R.C.S.

"This excellent book could hardly have been published at a more opportune time."—*The Lancet*

Pp. 384 65 Illustrations (9 in colour) **21s.** net

HEALTH IN RELATION TO OCCUPATION

By **H. M. VERNON,** M.D.

"We congratulate the author and commend the book to the profession."—*British Medical Journal*

Pp. 355 50 Figures 190 Tables **15s.** net

PULMONARY TUBERCULOSIS

By **G. G. KAYNE,** M.D., **W. PAGEL,** M.D., and **L. O'SHAUGHNESSY,** F.R.C.S.

"A long-felt want has been excellently fulfilled."—*Tubercle*

Pp. 580 365 Illustrations **42s.** net

A SURVEY OF CHILD PSYCHIATRY

By 21 Contemporary British Authorities, edited by **R. G. GORDON,** M.D., D.Sc., F.R.C.P.

"Alive with positive, constructive views and recommendations."—*Mental Welfare*

Pp. 290 **10s. 6d.** net

URINE : Examination and Clinical Interpretation

By **C. E. DUKES,** M.Sc., M.D., D.P.H.

"The most complete and up-to-date work available."—*The Lancet*

Pp. 418 97 Illustrations 12 Colour Plates **25s.** net

PIONEERS IN ACUTE ABDOMINAL SURGERY

By **ZACHARY COPE,** M.S., F.R.C.S.

"Well written and informative . . . may be read with pleasure and profit."—*British Medical Journal*

Pp. 148 38 Illustrations **7s. 6d.** net

THE EMOTIONAL FACTOR IN VISCERAL DISEASE

By **H. G. McGREGOR,** M.D., M.R.C.P., with a Foreword by **R. D. GILLESPIE**

"Almost every page offers something of value to the practising doctor."—*Edinburgh Medical Journal*

Pp. 210 4 Illustrations **8s. 6d.** net

CARBON MONOXIDE ASPHYXIA

By **CECIL K. DRINKER,** M.D., D.Sc.

"Should be on the shelves of all medical officers of the fighting services, and those with A.R.P. responsibilities."—*Journal of the R.A.M.C.*

Pp. 296 40 Illustrations **33s. 6d.** net

SILICOSIS AND ASBESTOSIS

By Various Authors, British and American, edited by **A. J. LANZA,** M.D.

"An authoritative, up-to-date, and succinct account."—*British Medical Journal*

Pp. 465 63 Illustrations **33s. 6d.** net

ORTHOPÆDIC APPLIANCES

By **HENRY H. JORDAN,** M.D., with a Foreword by **E. G. BRACKETT**

"A remarkable and valuable book."—*British Medical Journal*

Pp. 434 236 Illustrations **28s.** net

A CEREBRAL ATLAS of Normal and Defective Brains

By **RICHARD J. A. BERRY,** M.D., F.R.S.E., F.R.C.S.E.

"It is difficult to express adequately our sense of admiration for this magnificent work."
—*British Journal of Surgery*

Pp. 426 441 Illustrations **105s.** net

Oxford University Press

ADDRESSES AND ORIGINAL ARTICLES

DOSAGE OF SULPHANILAMIDE IN PROPHYLAXIS OF WOUND INFECTIONS

By A. T. Fuller, Ph.D. Lond., F.I.C.
AND
G. V. James, M.Sc. Lond., F.I.C.
MAJOR R.A.M.C.

The curative properties of sulphanilamide against human infections by hæmolytic streptococci and by some of the gas-gangrene organisms make this drug and its derivatives of great importance in the treatment of war wounds. Most of the deaths from infections in the Great War were due to these two groups of organisms; and the hæmolytic streptococci were also responsible for the great majority of the complications due to invading organisms, such as erysipelas, cellulitis, and septicæmia, associated with wound sepsis (Douglas, Fleming, and Colebrook 1920). The possibility that such infections could be prevented or rendered harmless by the early application of these drugs deserves serious consideration.

PRINCIPLES OF PROPHYLACTIC DOSAGE

We have no previous experience of preventive chemotherapy in man, but the many therapeutic investigations which have been carried out enable us to formulate certain guiding principles:—

(1) A certain concentration of the drug must be maintained in the blood for several hours or days if the invasive tendency of the organisms is to be held in check.

(2) Since sulphanilamide is rapidly absorbed and eliminated, doses must be given at short intervals, or some means must be found of securing continuous absorption.

(3) The more serious the infections, the higher the blood level of the drug needs to be.

(4) Treatment must be given as early as possible, for the greater the delay in therapy after the onset of the infection, the higher the blood level needs to be.

(5) Since these drugs are not devoid of toxic effects, and many of the wounded will be suffering from shock and may have lost much blood, it is important to use the smallest amount of the drug which is likely to afford protection.

For a given concentration in the blood the best results are obtained if sulphanilamide is given before infection, and the greater the delay between infection and therapy, the fewer the survivors. For example, four hours' delay halves the number of survivors at a given concentration in the blood. The heavier the infection, the more serious is any delay in therapy. These principles are well illustrated by the following examples taken from a paper by Litchfield, White and Marshall (1939).

With immediate therapy about two-thirds of mice which have received 200 lethal doses of group A hæmolytic streptococci recover if the concentration of sulphanilamide in the blood is kept at 1·5 mg. per 100 c.cm. With four hours' delay in therapy, a concentration of 6 mg. per 100 c.cm. saves only half the animals. A level of 6 mg. per 100 c.cm. does not save any animals who have received 20,000 lethal doses four hours before treatment begins, although 61 per cent. could be saved by immediate therapy. The concentrations of sulphanilamide in the blood were kept as constant as possible for three days.

In applying these results to man it should be remembered that man has some immunity to hæmolytic streptococci, which the mouse lacks. For example, human blood can kill many strains which mouse blood cannot. Further, the conditions of experimental infection are much more severe than in accidental wound infection. In the mouse many hundreds of lethal doses of actively growing culture containing nutrients are injected into the peritoneum, from which they spread to all parts of the body in a few seconds. In wound infections, the implant usually consists of only a few cocci, not actively growing, not accompanied by nutrient substances, and applied to a place where general diffusion throughout the body does not take place readily. It therefore seems probable that a concentration of 1·5 mg. of sulphanilamide per 100 c.cm. of blood would be adequate for prophylaxis, provided that it could be given not more than an hour or two after wounding. A level of 2 mg. per 100 c.cm., however, has been chosen in this paper as the minimal concentration desirable. It is important that this level should be reached quickly and maintained during the whole of each successive period of twenty-four hours. If several hours elapse before a wounded man can be treated, the first three or four doses should be increased to ensure a higher concentration of sulphanilamide in the blood.

SLOW CONTINUOUS ABSORPTION

Sulphanilamide is fairly soluble and rapidly excreted; if a single big dose—e.g., 5 g.—is given, much of the drug is excreted in eight hours. More prolonged effects may be obtained if less soluble derivatives—e.g., Prontosil rubrum and Proseptasine—are used, especially if given subcutaneously. Under these conditions a single dose will last for many weeks, but the concentration in the blood is probably too low to be effective. Since under war conditions it may not always be possible to give doses as often as desirable, we tried to obtain a longer effect from each dose by using specially coated tablets of sulphanilamide. In this we had the coöperation of Mr. F. H. Carr, D.Sc., of British Drug Houses Ltd., who prepared tablets having many types of coating and tested them for rate of solution in the laboratory, giving us the most promising ones. To minimise the risk of failure to absorb the whole tablet through a too resistant coating, some tablets were made in which the granules were coated before being compressed into tablets. Tablets with a fatty base and with many types of coating were found inpracticable, owing to technical difficulties. The tablets which were tried were those having a granule coating of shellac ("single shellac coated"). Some of these were further coated on the outside with shellac ("double shellac coated") or with keratin to delay absorption until the gut had been reached. Ordinary tablets were coated with collodion to provide a permanent film through which the drug could dialyse. A dose of 1·5 g. was used, and all tablets were of 0·5 g. Proseptasine was also tried as a means of securing delayed production of sulphanilamide, for a single dose is followed by the excretion of sulphanilamide in the urine for two to five days, depending on the subject.

Concentrations in the blood.—The resulting concentrations of the drug in the blood (see table 1) are on the average higher for the plain tablets than for any of the coated ones. Where the concentrations for different sets of observations varied greatly, the concentrations at intermediate times were obtained by interpolation, so that averages could be calculated.

TABLE I—CONCENTRATION OF SULPHANILAMIDE IN THE BLOOD AFTER ADMINISTRATION OF DOSES OF 1·5 G. IN DIFFERENT TYPES OF TABLET

Time (hours)	Blood concentration (mg. per 100 c.cm.)				
	Plain tablet	Shellac coating	Collodion coating	Keratin coating	Proseptasine
1	0·6	0·7	0·3	0·1	0·1
4	3·3	2·6	1·1	0·6	0·4
7	3·0	2·4	1·6	0·7	1·3
12	2·4	2·2	—	—	0·9
18	2·0	1·8	—	—	0·7
24	1·8	1·5	1·4	1·0	0·6
36	0·6	0·6	—	—	0·3
48	—	0·1	0·1	0·1	—

The results from the coated tablets were more varied than those from the plain tablets, and those from proseptasine varied most of all. When an intact tablet is given by mouth it is not really a single dose at a definite time, for its rate of absorption depends on conditions that are changing hourly and may differ in different people.

EXCRETION OF SULPHANILAMIDE

Table II shows the total excretion in 48 hours, expressed as a percentage of the amount given.

TABLE II—PERCENTAGE EXCRETION OF SULPHANILAMIDE FROM DIFFERENT TABLETS

Tablet	Percentage excreted
Plain tablet	82·0
Single shellac coating	60·0
Double shellac coating	59·0
Collodion coating	20·0
Keratin coating..	3·0
Proseptasine (conversion)	4·6

The figures are slightly lower than the percentage absorbed from the tablets, because the excretion is not complete in that time, but they are comparable. The low yields from the collodion and keratin tablets show the danger of incomplete absorption from a resistant coating. Table III gives the rates of excretion in mg. per hour. They were determined to obtain evidence of delayed absorption from the coated tablets and have been condensed in the table for the sake of clearness. In series 1 a slight delay is shown, because the maximal excretion from a plain tablet begins at 2–3 hours, and that from the coated tablets at 3–5 hours. Only the collodion-coated tablet shows a greater rate of excretion during 7–24 hours than at 0–7 hours. The collodion coating gave the most regular excretion, the rate being constant for 2–24 hours after the dose. Possibly a much lighter collodion coating would give satisfactory results if the need for delayed absorption should arise. Thus the coatings did cause delay in absorption, but owing to incomplete absorption they gave no resultant advantage.

RAPID ABSORPTION OF SULPHANILAMIDE

We next turned to the question of rapid absorption, of great importance in treatment. It seemed obvious that drugs given in solution would be absorbed more quickly than those given as a powder, and that absorption from an intact tablet would be slowest of all. In this inquiry 1·5 g. of sulphanilamide was administered in two ways : (1) in hot solution in 100 c.cm. of a 1 per cent. solution of citric acid flavoured with glucose, and (2) in intact 0·5 g. tablets. The concentrations of sulphanilamide in the blood were determined (fig. 1). The solution gives an advantage of between 1 and 2 hours over the intact tablets—a great increase in the safety factor. The results were obtained in men leading an active life. With men immobilised, the difference would be even greater.

DOSING AT EIGHT-HOUR INTERVALS

Next we tackled the question of how often the doses must be given to maintain a steady concentration of sulphanilamide in the blood with a total daily dose of 3 g. First, 1 g. was given every 8 hours. The concentration in the blood was estimated at 4 and 8 hours after a dose—i.e., at times of maximal and minimal concentration.

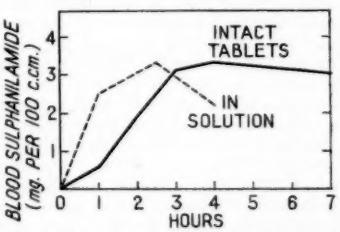


FIG. 1—Graphs of concentrations of sulphanilamide in the blood after a single 1·5 g. dose given (1) in intact tablets and (2) in solution.

This method did not produce a steady concentration in the blood during the first 24 hours, although later the minimal concentration was established well above 2 mg. per 100 c.cm. The findings in three people, and the average of the minimal concentrations in the blood are plotted in fig. 2. These minima (just before each dose) show a steady rise as the dosing proceeds.

DOSING AT FOUR-HOUR INTERVALS

In the second series of experiments one 0·5 g. tablet was given every 4 hours. Here again the blood estimations were made just before taking a dose, to obtain minimal figures. We used what seemed to be the most efficient way of dosing. We gave the first dose (1·5 g.) in solution for rapid absorption, and, starting 2 hours later, when the concentration of sulphanilamide in the blood was maximal, we gave

TABLE III—RATES OF EXCRETION OF SULPHANILAMIDE AFTER DIFFERENT TABLETS

Time (hours)	Sulphanilamide excreted (mg. per hour)				
	Plain tablet	Shellac coating	Collodion coating	Keratin coating	Proseptasine
	Series 1				
0–1	9·3	6·1	3·5	0·5	1·8
1–2	28·6	10·4	2·3	1·1	1·4
2–3	60·0	16·8	8·8	1·6	2·0
3–5	58·5	44·2	11·0	2·4	4·7
5–7	56·0	30·4	9·5	2·6	6·6
0–7	47·0	19·0	8·0	2·0	4·0
7–24	45·3	16·4	11·9	0·8	2·9
24–28	11·9	7·8	1·8	0·9	3·3
	Series 2				
0–10	41·8	29·6	—	—	1·5
10–20	32·3	32·8	—	—	1·9
20–36	19·5	9·7	—	—	1·1
36–48	9·0	6·2	—	—	0·5

one intact 0·5 g. tablet every 4 hours. Fig. 3 gives the findings in three people and the average figures, and it will be seen that the concentrations rise above 2 mg. per 100 c.cm. in the first hour and never fall below that level. These concentrations should be adequate for prophylaxis ; therefore we recommend a first dose of 1·5 g. dissolved in a warm sweetened 1 per cent. solution of citric acid, followed two hours later and then every 4 hours by an intact 0·5 g. tablet. It is desirable to give the first dose in citric acid, because it increases the solubility of the drug and so assists rapid absorption ; it disguises the unpleasant flavour of the drug ; and citrates and glucose are probably acetate precursors and would allay the immediate toxicity of the drug (James 1939). It is important to give the first dose in solution and to dose every 4 hours during the first 24 hours. After this time the difference between dosing every 4 hours and dosing every 8 hours is not so great, and 1 g. every 8 hours could be substituted without a great loss of efficiency, provided that intact tablets were given.

DISCUSSION

The results obtained with the coated tablets were disappointing. The rates of excretion showed that there was a definite delay in absorption, but this was offset by lack of absorption of the whole tablet. Conditions vary with each person, and a tablet which is completely absorbed by one person is only partially retained by another.

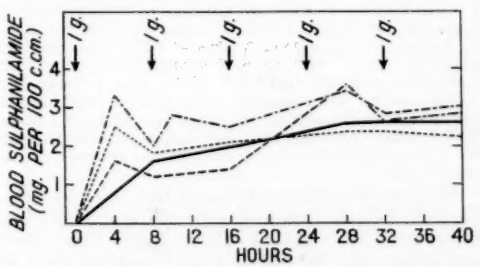


FIG. 2—Graphs of concentrations of sulphanilamide in the blood of three people given 1 g. every eight hours. Solid line, average of minima.

Although the tablets remain in the gut for at least 24 to 48 hours, the absorption of sulphanilamide from them becomes very slow after about 8 hours, by which time they have reached the colon, from which only a small amount of water is absorbed. Of the 6–10 litres of water absorbed from the gut 94 per cent. is absorbed through the small intestine. For this reason the absorption of sulphanilamide cannot be delayed for more than a few hours if absorption is to be complete.

Proseptasine keeps up a steady trickle of sulphanilamide for a few days, and it was hoped that, given with sulphanilamide, it would help to stabilise the concentrations of sulphanilamide in the blood. Proseptasine must be reduced to give sulphanilamide ; this introduces another factor in the uncertainty of the amount absorbed. From 2·5–10 per cent. of the dose of proseptasine has been recovered from the urine as sulphanilamide, the average amount in the present series being 4·6 per cent. of the 3 g. dose. This seemed an uneconomical way of administration, and the resulting concentrations in the blood were low.

Sulphanilamide is apparently non-irritant and can be absorbed from wound surfaces, and the possibility of packing wounds with sulphanilamide paste or

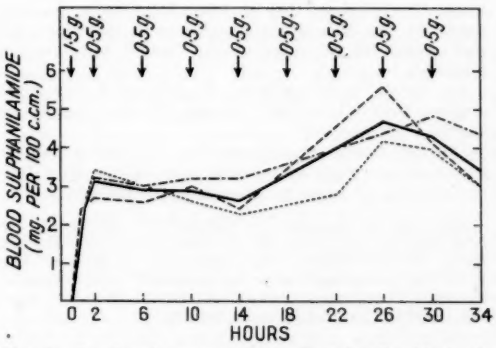


FIG. 3—Graphs of concentrations of sulphanilamide in the blood of three people treated with the recommended dosage. Solid line, average.

powder should be investigated. Jensen, Johnsrud, and Nelson (1939) found that a packing of 5–15 g. of sulphanilamide prevented sepsis in compound fractures.

Our findings show that the slower the absorption, the more efficiently the drug is used. The relative efficiency of any method of dosing is obtained by dividing the concentration of the drug in the blood at any given time by the rate of excretion at that time. The higher the figure, the greater the efficiency. Table IV gives these figures at 7 and 18 hours. The low figure for the plain tablet is partly due to the greater difficulty of sustaining a higher concentration in the blood.

It is interesting to compare the relative efficiencies of man and mouse. It is well known that the mouse needs much higher curative doses, weight for weight, than man. Litchfield, White and Marshall (1939) found that when mice receive the drug in food the concentration in the blood is approximately equal to the daily drug intake per 8 g. of mouse's body-weight. The men received 3·5 g. a day for about every 70 kg. of body-weight—i.e., 0·4 mg. per 8 g. The concentration of sulphanilamide in the blood was about 3·5 mg. per 100 c.cm., or about nine times that obtained in the mouse. Man deals with the drug much more efficiently than does the mouse and needs only about a tenth of the curative dose per unit of body-weight.

TABLE IV—EFFICIENCY* OF DIFFERENT TABLETS

Hours after first dose	Plain tablet	Shellac coating	Collodion coating	Keratin coating	Proseptasine
7	0·054	0·096	0·17	0·27	**0·20**
18	0·049	0·085	—	—	**0·29**

* Expressed by dividing the concentration of sulphanilamide in the blood at any given time by the rate of excretion at that time.

SUMMARY

(1) The recommendations of the War Office for the prophylactic use of sulphanilamide in war wounds are in the main supported. It is recommended that the first dose should be 1·5 g., given in solution for rapid absorption, and that the succeeding 0·5 g. doses, starting 2 hours after the first dose, should be given 4-hourly as intact tablets to prolong their effect.

(2) It is essential that the first dose be given as soon as possible after wounding, to combat the gas-gangrene organisms, which are implanted at the time

of injury and develop quickly. Further, prophylaxis must be continued for at least four days, because many of the hæmolytic streptococcal infections are not caused at the time of the wound but later in hospital.

(3) Delay is dangerous. If several hours have elapsed before treatment begins, the first few doses should be increased.

(4) The use of proseptasine or of coated tablets to secure more prolonged retention of the drug does not at present seem to offer any advantages.

Our thanks are due to Colonel L. Colebrook for help and advice; Mr. F. H. Carr, D.Sc., of British Drug Houses Ltd., for supplying tablets; the R.A.M.C. personnel who volunteered; and General Marrian Perry and Colonel A. S. M. Winder, who arranged for the trials to be made.

REFERENCES

Douglas, S. R., Fleming, A. and Colebrook, L. (1920) *Spec. Rep. Ser. med. Res. Coun., Lond.* No. 57.
James, G. V. (1939) *Biochem. J.* **33**, 1688.
Jensen, N. K., Johnsrud, L. W. and Nelson, M. C. (1939) *Surgery*, **6**, 1.
Litchfield, J. T., jun., White, H. J. and Marshall, E. K., jun. (1939) *J. Pharmacol.* **67**, 427.

TREATMENT OF EPILEPSY WITH SODIUM DIPHENYL HYDANTOINATE

BY ROBERT COOPE, M.D., B.Sc. Lpool, F.R.C.P.

HONORARY PHYSICIAN TO THE ROYAL LIVERPOOL UNITED HOSPITAL; VISITING PHYSICIAN TO MILL ROAD INFIRMARY; AND CONSULTING PHYSICIAN TO MAGHULL EPILEPTIC HOMES; AND

ROBERT G. R. BURROWS, M.B. N.U.I.

LOCAL MEDICAL OFFICER TO THE HOMES

WE have treated with Epanutin some 60 patients, most of them members of the Maghull Epileptic Homes colony, whose previous history we know well, and most of whom have been under our care for years. None are mental defectives or certifiable psychopaths. We began by choosing for this treatment a few patients who in spite of extensive treatment with full doses of the usual remedies (bromide, bromide and borax, belladonna, phenobarbital) were having many fits. Gradually extending our trials, we have aimed rather at studying carefully a group which we could handle comfortably than at trying to treat many patients. In this paper we shall mainly concentrate on 19 patients who have received epanutin for not less than 9 months.

RESULTS

The results are given in the accompanying table. Except for cases 18 and 19, who present certain special features which will be mentioned later, and in both of whom it was impossible to count with any accuracy the number of their previous minor attacks, the figures show that in 17 patients the total major attacks have been reduced from 1136 to 260 and the total minor attacks from 806 to 179.

Dosage.—In substituting sodium diphenyl hydantoinate for other drugs, we usually begin with a capsule of 0·1 g. the first day, two capsules the next, and three capsules the next; the following day a gradual reduction is begun in the dosage of the previously exhibited drugs—e.g., one of the three doses of bromide mixture is omitted daily, and then the dose of phenobarbital (if any) is reduced by gr. ½ at a time—until the patient is taking nothing but the three capsules of epanutin. Thus the alteration of treatment usually takes about a week.

In some patients the fits completely ceased on the dose of 0·3 g. but recurred when the daily dose was reduced.

Case 1 developed albuminuria due to a *Bacillus coli* pyelitis; during the period in which we reduced the daily dose to 0·2 g. he had 7 out of the 8 major attacks which he has suffered in the twelve months' treatment with epanutin.

Sometimes the daily dose of 0·3 g. brings little or no improvement, yet the addition of a further 0·1 g. may abolish the fits altogether.

In case 2, after a period of freedom from fits, the dose was reduced from 0·4 to 0·3 g. The fits then began to recur. Restoration of the dose of 0·4 g. abolished them once more, and the patient has had neither major nor minor attacks in the last six months.

Case 6 has had no attacks in nine months since being given 0·4 g. daily; previously he had had 11 major and 9 minor attacks in two months on 0·3 g.—approximately the same number as previously with the other drugs.

Case 9 is particularly interesting; soon after the beginning of treatment with sodium diphenyl hydantoinate he had mild toxic symptoms, whereupon the daily dose was reduced from 0·3 to 0·2 g. A little later the original dose was resumed, with no toxic effects, but also with no appreciable influence on the incidence of the fits. An increase to 0·4 g., however, was both effective and non-toxic, and for the last five months he has had no attacks whatsoever.

Two patients only (cases 14 and 19) have been given as much as 0·5 g. daily.

Case 13 used to have an average of 8 major attacks a month, with rare minor attacks, even on full doses of bromide and borax, together with phenobarbital gr. ½ at night. On the new treatment there was no real improvement until the dose was increased to 0·5 g. daily. He has now been taking this amount for four months, during which he has had but 1 major and 6 minor attacks, and this has been accompanied by a remarkable improvement in his general mental condition.

Of these 19 patients 13 can fairly and not extravagantly be described as totally different beings, both in the diminution of their attacks and in their general well-being, since the change from the old drugs to the new. The other 6 have shown sufficient improvement to make it well worth while to continue the treatment.

Minor epileptic manifestations.—We have already mentioned that in the 17 cases, selected for the observation of the effect of treatment on their major attacks, the minor attacks were reduced from 806 to 179. To three patients, however, we gave epanutin for at least nine months to see if it could control the minor fits.

For fourteen years case 18 has had "gazes" or "sensations," when "everything seems dead for the moment, and it feels as if my eyes are rolling." These attacks had become so numerous as to be uncountable, and "they used to take it out of me a lot." In the last nine months, under the influence of a daily dose of 0·3 g. of epanutin, he has had only 10 attacks of his "sensations," and he feels quite different.

Case 7 had almost daily minor attacks, in most of which he felt dizzy and fell, in spite of full doses of bromide, borax, and phenobarbital. He was extremely dull and slow in body and mind. Last year, sent away to our holiday home at the seaside, he had to be brought back because he could not stand alone. Table I shows a great improvement in the incidence of attacks, and his mental and physical improvement is astonishing. In ten months on epanutin he has had only 20 minor attacks, he is now working hard on the farm, and at the seaside this summer he was said to be "the life and soul of the party, and outwalking all of them."

RESULTS OF TREATMENT WITH EPANUTIN

Case	Age	Length of treatment (months)	Number of fits in corresponding periods			
			Before treatment		After treatment	
			Major	Minor	Major	Minor
1	19	12	71	73	8	1
2	19	12	61	14	8	0
3	24	11	186	26	26	0
4	31	11	99	5	5	0
5	39	11	164	44	13	2
6	22	11	50	101	11	9
7	35	10	24	320 +	2	20
8	37	10	30	18	0	0
9	29	9	120	0	35	2
10	27	9	32	14	0	0
11	49	9	34	2	11	2
12	33	9	28	66	15	47
13	29	9	70	2	35	13
14	29	9	12	0	0	0
15	25	9	40	0	28	0
16	27	9	75	1	44	17
17	21	9	40	120	19	66
			1136	806	260	179
18	23	9	3	Uncountable "sensations"	2	10
19	52	9	222	Uncountable myoclonic spasms	289	Very few

These figures cover the whole period of treatment—in some cases before the optimal dose was found.

Case 19 has been at Maghull for the last ten years. Not only does she have many typical major attacks, but also for some time she has been having an unbearable and almost uncountable number of "jumps"—myoclonic spasms—which cause her to fall or even throw her against the wall of the room in which she happens to be. A daily dose of 0·3 g. of epanutin made no difference, but an increase to 0·4 g. brought cessation of the "jumps," though the number of major attacks was as great as or greater than before. Life was now bearable, she said, because the spasms had ceased; she did not mind the major attacks so much. But after a few months, the major attacks began to come even more frequently. The dose was increased to 0·5 g. daily, and for the last three months the major attacks have been approximately halved. At present she is again having myoclonic spasms; but each attack of these "jumps" now invariably heralds a major attack.

Occasionally the usual character of the attacks is altered, apparently owing to the influence of epanutin.

In case 19, as already mentioned, the myoclonic spasms now invariably herald a major convulsion. In case 9, during the period when the dosage of epanutin was inadequate to abolish the major fits, two minor attacks occurred for the first time in his experience. Case 13 was for a period on a less than optimal dose, when the incidence of major attacks was hardly affected; nevertheless he was pleased because their rhythm was altered—they were abolished during the day-time and only took place at night.

There seemed to be no convincing reason for this change. Unlike Williams (1939), we have not yet met with a patient who over a reasonably long period has shown a diminution of the number of attacks, but a considerable increase in their intensity.

Other therapeutic effects.—On the usual long-continued administration of the orthodox drugs in epilepsy many of the patients are obviously "doped" and exhibit toxic manifestations of bromide and barbiturate therapy: mental dullness and often mental deterioration, bromide acne, dirty tongue, and disturbed digestion. When they are put on to sodium diphenyl hydantoinate, there is usually a striking contrast. The drug rash soon disappears, and the skin is healthier; in many patients there is an improvement in the general physical condition and in the capacity for bodily activity. A dull, depressed, and negative patient, for example, was unbelievably found sliding down the banisters shortly after beginning the new treatment, and many of our patients can get on to quite heavy work on the farm or in the workshops. Most of the patients are brighter, more alert, and less hesitant in speech and movement; the mental improvement may show itself in a new ability to enjoy reading, or even in a change of disposition, with the result that a bad-tempered, quarrelsome patient becomes a genial member of the community. Two of the patients mentioned in the table used to suffer from periodic "brain storms." For ten and eleven months on the new treatment these anticipated disturbances have been in abeyance. Unfortunately it cannot be assumed that the underlying basis for such attacks has been permanently altered; for on the day on which these words were written we learnt that one of these patients had had a fit in which he fell and sustained slight concussion, resulting in the precipitation of one of his typical mental upsets. Nevertheless it may be that, in some patients at least, the sedative action of bromide and phenobarbital is less effective in preventing such disturbances than is the action of epanutin.

Toxic reactions.—A long list of toxic reactions to the drug has been reported, such as exfoliative dermatitis, purpura, gross ataxia, dizziness, nausea, tremors, diplopia, blurred vision, vomiting, headache, and loss of appetite. Merritt and Putnam (1938) reported mild reactions in 15 per cent. and severe reactions in 5 per cent. of their patients, and Williams (1939) symptoms and signs of toxicity in 36 per cent. of 83 patients. It is possible that older and less generally healthy patients are more prone to these reactions; in Davidson and Sutherland's (1939) 12 mental-hospital patients, for example, 8 exhibited toxic effects within a few weeks. Williams found that continued administration of an effective dose of 0·4 g. or more daily produced various toxic effects. That this is necessarily so is not our experience; for cases 2, 3, 6, 9, 12, 15, and 16 have had 0·4 g. daily for ten, nine, ten, five, four, five and eight months respectively, and cases 13 and 19 0·5 g. daily for four and three months respectively without any toxic effects.

Our experience includes a much smaller incidence of toxic reactions to this drug. Of 60 patients treated by this method, 12 have shown such manifestations. Vertigo was observed in 6; we discontinued the drug in 4, and in the other 2 the vertigo disappeared on temporary reduction of the dose and did not recur when the dose was later increased. Gross ataxia and tremor developed in 2 patients; 1 refused to take any more epanutin, and the other remains free from these symptoms on 0·2 g. daily (together with a dose of phenobarbital gr. 1½), but develops them again if given 0·3 g. A severe generalised macular eruption was seen in 1 patient within a week of beginning the new treatment; it was accompanied by pyrexia and glands in the posterior triangle of the neck, the condition closely simulating German measles. It recurred when an attempt was made to resume the treatment.

The remaining 3 patients were mentally rather unstable before treatment: 1 morose and depressed, the other 2 excitable and quarrelsome. Within a week it became clear that their symptoms were being intensified, the epanutin was discontinued, and the previous treatment was reinstated.

Williams (1939) and others regard certain mental changes as due to poisoning by the drug and point out that they are intensified if the dose is increased, and are improved if the dose is decreased or abolished. These disturbances, however, may be coincidental; some of our patients have been subject for years to occasional periodic attacks of some form or other of mental disturbance, and some of these continue to have them whatever the form of treatment may be. At present we feel it difficult, if not impossible, to decide whether in any particular case such an episode is due to poisoning by the new drug, to a coincidence, or to the lack of the previously administered sedatives.

Kimball (1939) observed hyperplasia of the gums as a complication and regarded it as due to the drug. None of Williams's (1939) patients showed it; we have not found it in a single treated case, and a note in THE LANCET (1939), reviewing the position, cites controlled observations by Pratt (1939) which make it clear that this abnormality cannot be caused by the drug.

Failures.—We have already mentioned that in several cases treatment was discontinued or modified because of toxic symptoms. During the course of treatment 2 patients died:—

A woman, aged 31, who had been eleven years at the Homes, on full doses of bromides and phenobarbital had about 50 major and a few minor attacks each year. Three weeks after being put on epanutin she had a batch of 6 severe major attacks, which left her sleepy and fatigued. The next day she complained of dizziness and had 3 further major fits. Epanutin was replaced by bromide, chloral, and phenobarbitone, but without effect, for in the following twenty-four hours she had a further 15 attacks. Fearing the onset of status epilepticus, we added a dose of paraldehyde to the other medicines. She had no further fits but remained seriously ill, and three days later it was clear that she had an extensive bronchopneumonia, from which she died a week later.

A boy, aged 18, had been with us since the age of 9. Up to the age of 15 he had been treated with bromide and borax only, and he averaged about 120 major and 30 minor attacks a year. For the last three years the addition of a nightly dose of phenobarbital halved the incidence of the major attacks and altered their rhythm; now they came in heavy batches of much severity, with periods of freedom in between. With the increase in the amount of sedatives he began to show a certain slowing of mentality, which by the end of the three years had become an appreciable mental deterioration. A fortnight after being put on epanutin he had 2 major attacks, after which there were two weeks of freedom. Then he had another major attack, followed by 2 the next day, 4 three days later, and on the following day 19. Since none of the known toxic effects of the drug were observed, the dose was increased to 0·4 g. There were no further fits. After the batch of 19 fits the temperature rose to 102° F., and two days later it had risen to over 105° F., with the development of a disseminated bronchopneumonia, from which he died.

Unfortunately in both these cases it was impossible to obtain a post-mortem examination. In both these patients the explanation of the onset of a series of severe attacks almost approximating to status epilepticus may well be that they were robbed of the sedative effect of their previous drugs, and that the epanutin (in both cases the dose was 0·3 g. daily) had no appreciable therapeutic effect. In any event, even on his previous sedatives, the boy was apt to have sudden severe batches of attacks. The woman, however, had never been subject to such batches of attacks, and the final episode was very like those which sometimes take place in any epileptic from whom sedative drugs are suddenly withdrawn. Williams (1939) suggests that sodium diphenyl hydantoinate raises the threshold for convulsions, but has little depressant effect on fits which have managed to cross that threshold. In other words, hydantoinate produces its effects at an earlier stage in the epileptic process than do the usual sedatives. The catastrophe in neither of our two cases needs the cover of this ingenious surmise; it can be explained more simply, as we have suggested above, though we do not know whether this explanation is correct. Williams, however, has reported 2 cases in which the hydantoinate obviously had a good therapeutic effect, yet in whom status epilepticus later developed while the patients were under full treatment with the drug. It is important, therefore, that all such episodes should be reported and an attempt made to analyse them, for at present there is nothing to indicate which patients are liable to suffer such unexpected disasters. We can recall similar sad episodes among our colonists in pre-hydantoinate days, for which we have been unable to pin down a particular cause; moreover we have noticed in patients not under treatment with hydantoinate that apparently simple changes of regime, such as a holiday away from the colony, an "influenzal cold," or even the onset of cold weather affecting outdoor workers, may in some patients seriously increase the number and intensity of the fits.

SUMMARY

The general results of the treatment of 60 epileptics with sodium diphenyl hydantoinate are described, and the detailed results are given for 19 patients who received the drug for at least nine months.

The results have on the whole been favourable and often striking, in comparison with those obtained with other anticonvulsants. There has been improvement in the general physical and mental condition and in the incidence of major and minor attacks.

Toxic symptoms, mainly mild, developed in 12 patients. Bronchopneumonia caused the death of 2 patients after a condition approximating to status epilepticus, which appeared during treatment by the drug.

We wish to acknowledge the invaluable help received from Miss Bowden, S.N.R., matron of the Maghull Epileptic Homes, and from the sisters in charge of the separate houses.

REFERENCES

Davidson, S., and Sutherland, J. D. (1939) *Brit. med. J.* **2**, 720.
Kimball, O. P. (1939) *J. Amer. med. Ass.* **110**, 1244.
Lancet, 1939, **2**, 1105.
Merritt, H. H., and Putnam, T. J. (1938) *J. Amer. med. Ass.* **3**, 1068.
Pratt, C. H. (1939) *J. ment. Sci.* September, p. 986.
Williams, D. J. (1939) *Lancet*, **2**, 678.

WORTHING HOSPITAL.—The governors of this hospital have asked the local corporation to increase its contribution to the institution to £6000. Last year the corporation made a grant of £250 and the recommendation of the finance committee that this should now be increased to £300 was passed on March 7.

VITAMIN E.—In his letter in our issue of March 2 Professor Demole suggested that high dosage of vitamin E would be difficult to supply in the form of wheat-germ oil. Desitin Products Ltd. inform us that they sell a concentrate of wheat-germ oil containing 70 per cent. of α-tocopherol. With this preparation a daily dose of 30 mg. would cost 1*d.* a week.

THE HYPOPHYSIS AND PANCREATIC INSULIN

BY H. P. MARKS, B.Sc. Lond.
AND
F. G. YOUNG, D.Sc., Ph.D. Lond.

(*From the National Institute for Medical Research, London*)

SINCE the publication of the statement by Anselmino, Herold, and Hoffmann (1933) that the injection of extracts of the anterior lobe of the hypophysis into normal rats induced an increase in the number and size of the islets of Langerhans, no general agreement has been reached about the validity or significance of their belief. Whereas Bierring (1934), Chrzanowski and Grzycki (1937), and Fichera (1938) have provided some support, the existence of a pancreotropic pituitary substance has not been confirmed by Elmer et al. (1937), Santo (1938), or Wolff (1939). Richardson and Young (1937) were unable to confirm the observations of Anselmino and his colleagues under the conditions employed by them—namely, the administration of extract for a few days only—but nevertheless showed, using a quantitative method for the assay of the islet tissue, that, when young rats were treated daily for two weeks with a crude anterior-lobe extract, the amount of pancreatic islet tissue was approximately doubled. This crude extract exerted no obvious influence on the blood-sugar level of the rat, although the same preparation had a diabetogenic action when administered daily to normal dogs.

It seemed reasonable to suppose that an increase in the amount of islet tissue would be associated with an increase in the amount of insulin in the pancreas, and this supposition was shown to be correct by Marks and Young (1939), who observed that the insulin content of the rat pancreas was raised to values 130–250 per cent. above that of control animals by daily treatment with a crude anterior-lobe extract for one or two weeks. In 1939 Campbell, Keenan, and Best reported that the administration of diabetogenic anterior-pituitary extract diminished the insulin content of the dog pancreas (see Best, Campbell, and Haist 1939). Marks and Young (1939), in support of this observation, found that the pituitary extract which increased the insulin content of the pancreas in the rat diminished it in the dog. The substance which thus increased the insulin content of the rat pancreas is here called the "insulin-increasing substance."

Mirsky and Swadesh (1938) and Mirsky (1939) have suggested that the pancreotropic action of the anterior-pituitary extracts may be concerned with their ability to promote protein anabolism and thus to cause growth. On the other hand, growth-promoting preparations have been found to be diabetogenic (Evans, Meyer, Simpson, and Reichert 1932, Baumann and Marine 1932, Shipley and Long 1938, Young 1939a, c, 1940). The present investigation was undertaken to determine any relationship existing between the diabetogenic, insulin-increasing, and growth-promoting activities of ox anterior-lobe extracts.

METHODS

Chemical.—Blood-sugar was estimated by the Hagedorn-Jensen method. Glycogen was estimated by a modification of the method of Evans, Tsai, and Young (1931).

A crude alkaline extract was prepared from the freshly dissected anterior portions of ox pituitary glands brought frozen from the slaughter-house, by the method previously described (Young 1938). 4 c.cm. of this crude extract contained material (60–80 mg.) extracted from 1 g. of fresh anterior-lobe tissue. An inactive solution for administration to control animals was similarly prepared from fresh thymus or from liver tissue. A crude alkaline extract of a commercial acetone-desiccated material was prepared at room temperature by a similar method, with a concentration such that 1 c.cm. was equivalent to 50 mg. of desiccated tissue. One experiment was carried out with albumin, pseudoglobulin, and euglobulin fractions of ox anterior-lobe tissue. These extracts were prepared by fractional precipitation with ammonium sulphate by the method previously described (Young 1939c).

For the estimation of insulin in pancreatic tissue the material was extracted by the method outlined by Jephcott (1932) and by Scott and Fisher (1938). Unlike Best, Haist, and Ridout (1939), we were unable to recover by this method more than 80 per cent. of insulin added to minced tissue, but we have preferred to express our findings in terms of the observed values rather than to multiply the results by a recovery factor.

Biological.—The rats used in this investigation were Wistar-strain albino animals, receiving a well-balanced mixed diet. The male animals initially weighed 100–130 g., and the female rats weighed approximately 150 g. each at the beginning of the experiment. For the determination of the insulin-increasing activity of an extract, groups of 8–10 rats received daily subcutaneous injections for periods up to two weeks. They were then killed by stunning and the pancreas and liver quickly dissected out and weighed, the glycogen content of the liver and of samples of the muscles being determined. To eliminate the influence of any irregularities in dissection, the results of assays for pancreatic insulin in the rat are expressed as units per 100 g. of body-weight. Pancreatic tissue from groups of rats was bulked for extraction. The potency of the extract was determined by the mouse method as described by Marks and Pak (1936). Assays, usually six to eight, were carried out on the pancreatic tissue from each group of ten rats and the results averaged. The differences in the results for large groups of rats, discussed in the present paper, lie well outside the range of error for this method of insulin assay.

Growth-promoting activity was determined by treating groups of 5–10 female rats, weighing initially about 150 g., with daily injections of extract for two weeks (cf. Evans and Simpson 1931). Diabetogenic activity was determined by the intraperitoneal injection of successively increasing doses of extract to normal male dogs, weighing approximately 10 kg., by the method previously described (Young 1938).

RESULTS

Insulin-increasing activity of diabetogenic fractions.—Young (1939c) has shown that, when a crude ox anterior-lobe extract is fractionated with ammonium sulphate at 0° C., diabetogenic activity is found in the pseudoglobulin fraction so prepared but not in the euglobulin or in the albumin fractions. Growth hormone accompanies the diabetogenic substance during the course of this fractionation. Fig. 1 illustrates graphically the relative growth-promoting, diabetogenic and insulin-increasing activities (rat pancreas) of these fractions, and indicates that all three factors are present together in the crude extract and in the pseudoglobulin fraction, but little or none in the other fractions tested. Observations such as these suggest that the growth-promoting, diabetogenic, and pancreotropic substances might be related or identical (Young 1939a, 1940).

Activities of fresh extract and of stale non-diabetogenic preparations.—Houssay (1936) first emphasised that the diabetogenic activity of anterior-lobe pre-

TABLE I—RESULTS OF TREATING RATS DAILY WITH 1–2 C.CM. OF ANTERIOR-LOBE EXTRACT (EQUIVALENT TO 0·25–0·5 G. OF FRESH GLAND) FOR TWO WEEKS

Treatment	No. and sex of rats	Average period of fast (hours)	Blood-sugar (mg. per 100 c.cm.)	Glycogen %		Liver and Pancreas Weight (g. per 100 g. of body-weight)		Average increase in body-weight (g. per day)	Insulin in pancreas	
				Liver	Muscle	Liver	Pancreas		Units (per 100 g. of body-weight)	Per cent. above that of controls
Fresh pituitary extract ..	48 M	3	108	3·04	0·32	5·32	0·56	3·1	1·21	89
Control	48 M	3	111	3·71	0·41	4·15	0·51	2·4	0·64	—
Stale pituitary extract ..	28 M	5	109	2·87	0·33	4·55	0·47	3·1	1·02	86
Control	28 M	5	112	3·04	0·36	4·19	0·49	2·4	0·55	—
Extract of commercial acetone-desiccated gland ..	23 (M + F)	12	97	0·88	0·29	3·61	0·45	1·6	1·31	101
Control	23 (M + F)	12	95	0·82	0·28	3·64	0·45	1·7	0·65	—

parations might be rapidly lost at room temperature, and it seemed of importance to test the insulin-increasing activity of stale non-diabetogenic extracts, to determine whether or not the action on the rat's pancreas was merely a compensatory response to the diabetogenic action of the extract. First, it was necessary to determine precisely under what conditions the diabetogenic activity of crude extracts was lost. It was found in general that twenty-four hours at room temperature deprived a crude alkaline (pH 8·5) extract of ox anterior lobe of recognisable diabetogenic activity; in these experiments an extract was regarded as non-diabetogenic if the daily intraperitoneal injection of doses slowly increasing from an equivalent of 10 g. of fresh tissue each day to a dose equivalent to 25 g. a day did not produce glycosuria or ketonuria in a normal male dog. In one instance, however, an extract did retain mild diabetogenic activity after remaining at room temperature for twenty-four hours, and the extracts were subsequently incubated for five hours at 37° C., instead of being left at room temperature for a longer period. Tests were carried out on 8 dogs with fresh extract which had been allowed to become stale, all with negative results. Tests on 10 dogs, in some of which extract containing material from 10 g. of acetone-desiccated material (equivalent to about 50 g. of fresh tissue) was injected daily, have revealed no detectable diabetogenic activity in samples of the commercial acetone-desiccated anterior-lobe powder used by us. Since, in our experience, the smallest effective daily dose of crude fresh anterior-lobe extract is 1–4 g. equivalent of fresh tissue, we may assume that the stale extracts had lost at least five-sixths of their diabetogenic activity. Long (1937), however, has clearly shown that extracts which are not diabetogenic in intact animals may induce a substantial glycosuria in hypophysectomised-depancreatised animals. Our stale extracts, which are not diabetogenic in the normal dogs, may nevertheless be effective glycosuric agents in the hypophysectomised-depancreatised dog.

Table I summarises data relating to rats treated with fresh and with stale crude alkaline anterior-lobe extracts daily for two weeks. The stale extract and the extract of commercial material are both as effective as the fresh crude extract in raising the insulin content of the rat pancreas. There is, therefore, no reason to believe that the diabetogenic and the insulin-increasing substances are identical. Furthermore, treatment with anterior-lobe extract does not affect the blood-sugar level of the rat or the weight of the pancreas expressed as a percentage of the body-weight, but slightly diminishes the glycogen stores of the liver and muscles. The extracts of fresh pituitary gland, whether or not deprived of diabetogenic activity by becoming stale, increased the relative weight of the liver and promoted growth in these male rats, but the extract of commercial dried gland, which did not promote growth, also did not increase the relative size of the liver.

Fig. 2 illustrates the dose-response curve for male rats, showing an approximately linear relationship between the logarithm of the dose of crude extract injected daily and the amount of pancreatic-insulin per 100 g. of body-weight, with a daily dosage of 0·125–0·500 c.cm. Evidently a maximal result is obtained with 2 c.cm. of extract injected daily, and an easily demonstrable effect is given by 0·25 c.cm. a day. We have been unable to demonstrate any clear-cut increase in the insulin content of the pancreas of rats treated daily with pituitary extract for less than one or two weeks; hence our data for the increase of insulin content afford no collateral support to the claim of Anselmino et al. (1933) to have observed an increase of islet tissue as the result of shorter periods of pituitary treatment.

Although the insulin-increasing activity of a crude extract of the commercial powder was easily demonstrable when 1 c.cm. of extract (equivalent to 50 mg.

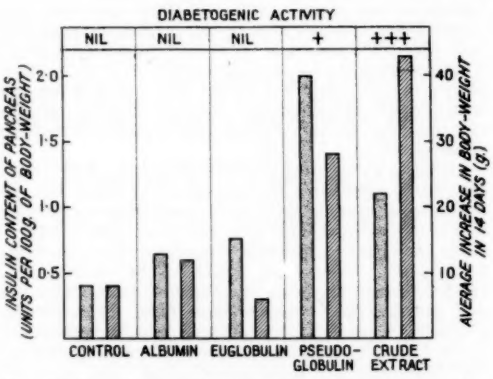


FIG. 1—Growth-promoting and insulin-increasing activities of anterior-pituitary fractions in female rats. Results given are average values for groups of 9 animals. Material extracted from 2 g. of fresh tissue was administered subcutaneously daily for two weeks in the tests on the different fractions. For the test on the crude extract 0·5 c.cm. was injected daily, equivalent to 0·125 g. of fresh tissue. Stippled columns, insulin; shaded columns, growth.

of dried tissue) was administered daily to male rats (table I), we were unable to detect any growth-promoting activity when such an extract was administered daily to female rats in a dose as large as 2 c.cm. Fig. 3, which gives dose-response curves (female rats) for fresh and stale (five hours at 37° C.) crude extracts of fresh anterior lobe, shows that the daily administration of 0·125 c.cm. of fresh or of stale extract was an effective growth-promoting agent under conditions similar to those obtaining in the tests with the extract of commercial dried gland ; hence we may assume that little or no growth hormone was present in extracts of the commercial dried gland. A similar preparation was found also to be deficient in other anterior-lobe substances (Chance, Rowlands, and Young 1939). These results show that extracts with insulin-increasing activity are not necessarily growth-promoting, and that the insulin-increasing substance and the growth hormone are presumably not identical.

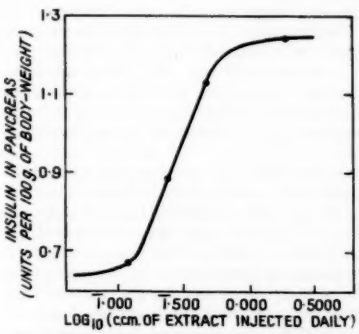


FIG. 2—Dose-response curve for the insulin-increasing activity of a fresh crude alkaline anterior-lobe extract in normal male rats. The extract, 1c. cm. of which was equivalent to 0·25 g. of fresh anterior-lobe tissue, was injected daily for two weeks.

Fig. 3 also shows that the stale extract of the fresh tissue, which has lost its diabetogenic action, apparently retains its full growth-promoting activity. The data for the pancreatic-insulin content of the treated animals included in fig. 3 indicate that, as with male rats, the insulin-increasing activity of the stale extract is similar to that of the fresh preparation.

Experiments with dogs.—Whereas the Wistar-strain rat never, in our experience, exhibits a significant and sustained hyperglycæmia when treated with a diabetogenic pituitary extract daily for some days, the dog exhibits a clear-cut diabetic syndrone under these conditions. Consequently it is not surprising to find that the pancreas of the dog differs from that of the rat in its response to the administration of such an

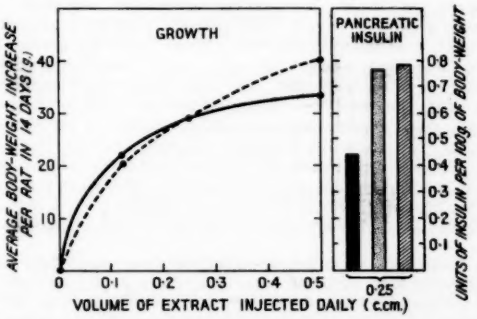


FIG. 3—Growth-promoting and insulin-increasing activities of fresh and of stale anterior-pituitary extracts in female rats. *Growth :* dose-response curves. Average increase in weight about that of controls in 14 days. Continuous curve, fresh crude alkaline extract ; interrupted curve, stale (5 hours at 37° C.) crude alkaline extract.

Pancreatic-insulin in control and treated animals : black column, 29 control rats ; stippled column, 44 rats treated with fresh extract ; shaded column, 25 rats treated with stale extract.

extract and, as first observed by Best, Campbell, and Haist (1939), exhibits a profound fall in insulin content when a fresh diabetogenic extract of anterior-lobe tissue is injected daily for some days (table II). Best, Haist, and Ridout (1939) have shown that fasting causes a fall in the insulin content of the rat pancreas, but the figures for liver and muscle glycogen contents (table II) show that the nutritive condition of the different groups of our dogs was comparable with that of normal control animals ; hence inanition was clearly not a factor in the observed reduction, to less than a seventh of its normal value, of the insulin content of the pancreas of the dog treated with fresh extract. When dogs were similarly treated with stale non-diabetogenic anterior-lobe extract the insulin content of the pancreas did not significantly differ from that of normal dogs (table II). Thus it appears that the loss of diabetogenic activity was accompanied by a loss of ability to reduce the insulin content of the pancreas of the dog.

Best, Campbell, and Haist (1939) found that, after seven daily injections of extract into the dog, cessation of treatment resulted in a rapid rise of the insulin content of the pancreas to the normal value. They conclude that the average blood-sugar values and the insulin contents of the pancreas, determined at corre-

TABLE II—RESULTS OF TREATING NORMAL MALE DOGS WEIGHING APPROXIMATELY 10 KG. DAILY WITH ANTERIOR-PITUITARY EXTRACT *

No. of dogs	Anterior-lobe extract injected	Average duration of treatment (days)	Condition of dog	Glycogen % (average)		Pancreas	
				Liver	Muscle	Average weight (g. per 100 g. of body-weight)	Average insulin content (units per 10 kg. of body-weight)
9	None	—	Normal	4·64	1·03	0·23 ± 0·016	76 ± 8·5
6	Diabetogenic	9	Temporarily diabetic †	2·82	0·87	0·30 ± 0·020	9
5	Stale crude extract, not diabetogenic	10	Not diabetic	3·14	0·66	0·32 ± 0·025	66
2	Diabetogenic	12	Refractory state immediately after temporary diabetes had disappeared	3·67	0·85	0·16	6

* Animals fasting approximately 18 hours. † Average duration of diabetic condition—6 days.

sponding times, are rather strikingly correlated; and, although this is undoubtedly true in a general sense, it is not precisely so. Thus the data in fig. 1 of their paper show that, when daily treatment with extract is discontinued, the blood-sugar falls rapidly during the next two days, while the insulin of the pancreas remains low or even falls slightly; two days after the cessation of treatment the average blood-sugar level was below 100 mg. per 100 c.cm., although the insulin content of the pancreas at this time was at the lowest level shown in this figure. We have observed a phenomenon which may be comparable.

Two dogs were treated daily with a small dose of anterior-lobe extract long enough for the initially induced diabetic condition to disappear—i.e., the animal became refractory to the diabetogenic action of the extract. These animals were killed on the day after the disappearance of glycosuria and the return of the blood-sugar to a normal value; in one dog the insulin content of the pancreas was 4 units, and in the other 8 units (table II).

The lack of a precise correlation between pancreatic insulin content and blood-sugar level is not surprising in view of the fact that the insulin content of the pancreas is not a direct index of the rate of secretion of insulin by that organ and cannot represent more than the balance between production and secretion at the time of examination.

Mention must be made of the results from one dog, which are unique in our series. This animal received treatment with a crude alkaline extract which had been allowed to remain at room temperature for twenty-four hours. Although in all other instances such treatment caused the disappearance of detectable diabetogenic activity, the daily administration of this extract led to the appearance of a moderate diabetes, the glycosuria rising to a maximal value of 26 g. on the eighth day of treatment, at which time a quantity of the extract representing 25 g. of fresh tissue was being injected each day. The animal became sugar-free on the eleventh day of treatment, despite continuation of the injections, and at this time the dog was killed and the insulin content of the pancreas found to be 52 units. This figure is in striking contrast to that for the two dogs which became refractory as the result of treatment with a normal fresh diabetogenic extract (table II).

DISCUSSION

Identity of the insulin-increasing substance.—The results of the experiments with rats have demonstrated the existence of three types of crude anterior-lobe extract:—

(1) Those which possess diabetogenic, insulin-increasing, and growth-promoting activities. The relatively purified diabetogenic pseudoglobulin fraction resembles a crude fresh extract in belonging to this type.

(2) Preparations with no detectable diabetogenic activity which are growth-promoting and have insulin-increasing activity—"stale" crude extracts of fresh anterior-lobe tissue.

(3) Extracts which have no detectable diabetogenic or growth-promoting activities but can increase the insulin content of the rat pancreas—a crude extract of our commercial dried anterior-lobe powder.

From these results we may assume that the diabetogenic growth-promoting, and insulin-increasing substances cannot be identical. Nevertheless we have not been able to prepare diabetogenic fractions which are free from either growth-promoting or insulin-increasing activities, and we have not obtained growth-promoting preparations devoid of insulin-increasing activity. Our observations, therefore, do not preclude the possibility that the anterior-lobe tissue originally contained a substance (pseudoglobulin?) having all three activities—diabetogenic, growth-promoting, and insulin-increasing—and that differential inactivation of prosthetic groups concerned in the different activities may take place. Furthermore, our results are not incompatible with the possibility, considered by Mirsky (1939) and by Young (1939a, c, 1940), that the pancreotropic or insulin-increasing activity of anterior-lobe extracts may be intimately concerned in their growth-promoting activity. Our results suggest, however, that the insulin-increasing factor is not growth-promoting.

Evidence is lacking at present that the pancreotropic substance, which increases the amount of islet tissue in the pancreas of the rat, is identical with the principle which increases the amount of insulin therein. Nevertheless, until evidence is forthcoming for a plurality of the factors concerned, the principle of William of Occam must lead to the provisional assumption that one substance is responsible for two such closely related effects. But we have here used two different names—"pancreotropic substance" and "insulin-increasing substance"—to make quite clear the type of activity which the data represent.

We do not assume that an increased amount of insulin in the pancreas necessarily means that the rate of secretion of this hormone into the blood-stream has been raised; this point has been discussed by Best, Haist, and Ridout (1939). The greater amount of insulin in the pancreas observed in our experiments presumably means that more insulin is available for secretion by that organ; but the results of blood-sugar determinations do not support the assumption that insulin is being liberated into the blood-stream at an abnormally high rate. Finally, we must emphasise the complete lack of evidence at present that the anterior-pituitary lobe secretes a hormone whose function is the maintenance of insulin production and of the integrity of islet tissue in the pancreas. The only evidence directly relevant to this point of which we are at present aware is that of Krischesky (1936), who found that hypophysectomy in the rat increased the quantitatively assayed amount of islet tissue in the pancreas, and that this increase was in part prevented by the administration of anterior-lobe extract to the hypophysectomised animals. This result seems to be the converse of that reasonably to be expected from the observations of Richardson and Young (1937) and from those of the present investigation. Our colleague, Mr. M. Griffiths, is at present investigating the influence of hypophysectomy on the insulin and the islet-tissue content of the rat pancreas; meanwhile it seems desirable to suspend judgment on the question of a hormonal influence of the anterior lobe on pancreatic-islet tissue and provisionally to avoid the assumption that the effects of injecting anterior-lobe extracts into the intact animal necessarily reproduce normal physiological effects.

Difference in response of the rat and of the dog.—The administration of anterior-lobe extract to completely depancreatised dogs can increase the severity of the diabetic condition of these animals (Shpiner and Soskin 1934, Gerschman and Marenzi 1935, Houssay 1936, Foglia et al. 1937); it is therefore evident that the diabetogenic action of anterior-lobe extract is exerted, to some extent at least, by an extrapancreatic mechanism. The apparent paradox, that fresh crude anterior-lobe preparations raise the insulin content of the rat pancreas but diminish the

amount of insulin found in the pancreas of the dog, is therefore possible of resolution. The extrapancreatic mechanism which responds to the influence of diabetogenic pituitary extract may be less sensitive in the rat than in the dog ; hence the hyperglycæmia produced in the dog (but not in the rat) induces such an outpouring of insulin from the pancreas as to diminish its insulin content, despite the direct insulin-increasing activity of the extract observable in the rat. Alternatively, the difference in the sensitivity to the diabetogenic action of pituitary extract in the two species may be the result of an inherently greater sensitivity of the rat's pancreas to the influence of the insulin-increasing factor, as compared with that of the dog. Such a difference in response to the insulin-increasing action would be in keeping with the observation that a stale non-diabetogenic extract of fresh anterior-lobe raises the insulin content of the rat pancreas but leaves that of the dog pancreas unchanged. Anterior-lobe extracts may specifically inhibit the production or secretion of insulin by the pancreas (see Houssay and Foglia 1936), but at present there is no obvious advantage to be gained from discussing these possible explanations. When the same extract is used, the response is a rise of pancreatic-insulin in the rat and a fall in the dog, but there is no need to assume a qualitative difference in response of the two species to the same principle. There are certainly two principles, and the observed effects can be provisionally explained on the assumption that the dog is more sensitive than the rat to one, the rat more sensitive than the dog to the other.

The suggestion has been made that dogs become refractory to the diabetogenic action of anterior-lobe extract when a small dose is given daily for a week or more, because the pancreotropic action of the crude extract has made more insulin available (Young 1939b). The results of the two experiments on dogs which had become refractory to the diabetogenic action of the extract (table II) show that the insulin content of the pancreas was still at the low level observed during the period when the animal was in a diabetic condition. The insulin content of the pancreas, however, does not necessarily indicate the rate at which insulin is being secreted by that organ.

SUMMARY

The daily administration of a crude anterior-lobe extract to normal rats for two weeks leads to a rise of the insulin content of the pancreas to nearly twice the normal value. The "insulin-increasing" or "pancreotropic" substance, responsible for this rise, accompanies the diabetogenic and growth-promoting substances during ammonium-sulphate fractionation of a crude extract, but it is not identical with either of these principles. The diabetogenic and growth-promoting substances are also not identical.

Extracts which are insulin-increasing in the rat may either reduce the insulin content of the dog pancreas to a low level or leave it without significant change, according to whether the extract is diabetogenic or not. The insulin-increasing action of a crude fresh extract of anterior lobe may be obscured in the dog by the operation of the diabetogenic action of the extract.

The evidence available permits the assumption that the anterior lobe of the pituitary gland contains a "pancreotropic" or "insulin-increasing" substance which is not identical with either the diabetogenic or the growth-promoting principle, but at the present stage it cannot be assumed that this substance is a hormone.

References at foot of next column

ACUTE SUPPURATIVE PAROTITIS
TREATMENT BY DEEP X-RAY THERAPY

BY A. J. C. LATCHMORE, M.S. Lond., F.R.C.S.
SENIOR SURGICAL TUTOR IN THE UNIVERSITY OF LEEDS

A. A. D. LA TOUCHE, M.A. Camb., F.R.C.S., D.M.R.
DIRECTOR OF THE RADIUM DEPARTMENT AT THE GENERAL INFIRMARY AT LEEDS ; AND

H. S. SHUCKSMITH, B.Sc., M.B. Leeds, F.R.C.S.
SECOND SURGICAL TUTOR IN THE UNIVERSITY OF LEEDS

WE have used deep X-ray therapy in 11 cases of suppurative parotitis in the General Infirmary at Leeds during the last two years and have been favourably impressed with the results. Any aid in the treatment of this condition is to be welcomed, because acute parotitis, though rare, is serious, usually complicating some other illness or developing after surgical operations and often causing death.

ÆTIOLOGY

The cause of acute parotitis is probably an infection ascending the duct of the gland from a dry infected mouth. A dry mouth is the most important single cause of parotitis and is usually due to dehydration of the patient or to lack of the normal stimulus to salivation—i.e., eating and chewing. This is clearly shown by the fact that parotitis so often complicates an abdominal, especially a gastric, operation in which fluids by mouth have been greatly restricted and all eating has been stopped. Payne (1937) has drawn attention to the frequency of this complication during the treatment of severe hæmatemesis and melæna. Case 11 (see below) had a gastro-enterostomy for advanced pyloric stenosis due to duodenal ulcer. Immediately after operation he had a severe hæmatemesis, which was treated by drip blood-transfusion, and on the third day he developed parotitis. He was dehydrated, and the giving of lemon or of rusks to chew did not produce any visible secretion from either Stensen's duct, though a free flow from the sub-

MR. MARKS AND DR. YOUNG : REFERENCES

Anselmino, K. J., Herold, L., and Hoffmann, F. (1933) *Klin. Wschr.* **12**, 1245.
Baumann, E. J., and Marine, D. (1932) *Proc. Soc. exp. Biol., N.Y.* **29**, 1220.
Best, C. H., Campbell, J., Haist, R. E. (1939) *J. Physiol.* **97**, 200.
— Haist, R. E., and Ridout, J. H. (1939) *Ibid*, p. 107.
Bierring, K. (1934) *Bull. Histol. Tech. micr.* **11**, 297.
Chance, M. R. A., Rowlands, I. W., and Young, F. G. (1939) *J. Endocrinol.* **1**, 239.
Chrzanowski, B., and Grzycki, S. J. (1937) *Klin. Wschr.* **16**, 488.
Elmer, A. W., Giedosz, B., and Scheps, M. (1937) *C.R. Soc. Biol. Paris*, **124**, 823.
Evans, C. L., Tsai, C., and Young, F. G. (1931) *J. Physiol.* **73**, 67.
Evans, H. M., Meyer, K., Simpson, M. E., and Reichert, F. L. (1932) *Proc. Soc. exp. Biol., N.Y.* **29**, 857.
— and Simpson, M. E. (1931) *Amer. J. Physiol.* **98**, 511.
Fichera, G. (1938) *Pathologica* **30**, 286.
Foglia, V. G., Gerschman, R., Marenzi, A. D., Munoz, J. M., and Rietti, C. T. (1937) *C.R. Soc. Biol. Paris*, **126**, 252.
Gerschman, R., and Marenzi, A. D. (1935) *Ibid*, **120**, 737.
Houssay, B. A. (1936) *New Engl. J. Med.* **214**, 961, 971.
— and Foglia, V. G. (1936) *C.R. Soc. Biol. Paris*, **123**, 824.
Jephcott, C. M. (1932) *Trans. roy. Soc. Can.* **25**, section v, 183.
Krischesky, B. (1936) *Proc. Soc. exp. Biol., N.Y.* **34**, 126.
Long, C. N. H. (1937) *Medicine, Baltimore*, **16**, 215.
Marks, H. P., and Pak, C. (1936) *Bull. Hlth Org. L.o.N.* **5**, 631.
— and Young, F. G. (1939) *Chem. Ind. Rev.* **58**, 652.
Mirsky, I. A. (1939) *Endocrinology*, **25**, 52.
— and Swadesh, S. (1938) *Amer. J. Physiol.* **123**, 148.
Richardson, K. C., and Young, F. G. (1937) *J. Physiol.* **91**, 352.
Santo, E. (1938) *Z. ges. exp. Med.* **102**, 390.
Scott, D. A., and Fisher, A. M. (1938) *J. clin. Invest.* **17**, 725.
Shipley, R. A., and Long, C. N. H. (1938) *Biochem. J.* **32**, 2242.
Shpiner, L. B., and Soskin, S. (1934) *Amer. J. Physiol.* **108**, 97.
Wolff, R. (1939) *C.R. Soc. Biol. Paris*, **131**, 315.
Young, F. G. (1938) *Biochem. J.* **32**, 513, 524.
— (1939a) *Brit. med. J.* **2**, 393.
— (1939b) *New Engl. J. Med.* **221**, 635.
— (1939c) *J. Endocrinol.* **1**, 339.
— (1940) *Endocrinology*, **26**, 345.

maxillary glands resulted. The chewing of rusks by control postoperative patients who were not dehydrated caused a stream of saliva to flow from the parotid glands. This shows the extreme degree of suppression of function which had allowed the infection to ascend.

Infection is generally due to the *Staphylococcus aureus*, and, although in most cases some inflammation of the mouth is manifest, it is often not striking, and the fact that it is not the most important cause is shown by the extreme rarity of parotitis complicating forms of stomatitis where the patient is not dehydrated. If, however, there is mechanical interference with the drainage from Stensen's duct—e.g., by ulceration of the cheek—then parotitis is more likely to develop.

PATHOLOGY AND DIAGNOSIS

The process starts as an ascending infection of the duct system associated with more or less suppression of the flow of saliva. It is another example of stagnation leading to infection. The seriousness of the infection is largely due to the dense fascial envelope of the gland, which prevents adequate swelling, and the resulting tension causes widespread necrosis, which, when extremely severe, has been called "acute necrotic parotitis" (Cope 1919). The investment of the lobules by the fascia also prevents the confluence of the foci of pus, with the result that, instead of forming a large abscess which could be adequately drained by one incision, the pus remains scattered in tiny pockets throughout the gland—an appearance which has given rise to the expression "carbuncle of the parotid." Finally, the sheath ruptures, and pus may be discharged subcutaneously into the external ear, or into the pharynx, or it may spread down the neck. The relationship of the deep part of the gland to the carotid sheath makes possible thrombosis of the internal jugular vein, and pyæmia may develop.

Acute suppurative parotitis can usually be *diagnosed* at a glance, but important confirmatory evidence is usually to be found by inspection of the orifice of Stensen's duct. This is nearly always visibly inflamed, but we have seen 2 cases in which the inflammation started in the periphery of the duct system, while the orifice of Stensen's duct was normal. Besides the redness of the orifice of the duct, pus or turbid saliva may be made to appear by massaging gently along the course of the duct. The predisposing factors must also be considered in diagnosis. Patients very rarely develop parotitis "out of the blue"; they are usually already gravely ill and dehydrated. The differential diagnosis is from other inflammatory swellings in the region, especially acute pre-auricular adenitis, due to some septic lesion on the face, and erysipelas following operations on the neck.

TREATMENT

Treatment in the main has been very unsatisfactory, and the chief reason for this is the difficulty of procuring adequate drainage because of the scattered multiple foci of infection, the danger of injuring the facial nerve, and the grave illness of the patient.

Prophylaxis.—Three things should be done to prevent parotitis :—

(1) To avoid dehydration, continuous intravenous infusion of a mixture of 4 parts of a 5 per cent. solution of glucose and 1 part of normal saline should be instituted, 6 pints of this solution being given in twenty-four hours.

(*b*) The toilet of the mouth should be carefully performed.

(*c*) To provide a stimulus to the secretion of saliva, when the natural stimulus is lacking, the patient should be given some chewing-gum.

Conservative treatment.—The aim of conservative treatment is to promote resolution without suppuration or, failing this, to localise the process. With this in view it has been advocated (Payne 1938) to assist drainage along the duct by gently probing it if it is blocked, and by gentle massage, and by irrigation with weak antiseptic solutions. We have not been impressed, however, with the part played by drainage through the duct system in the process of resolution, and the results of X-ray therapy have been so excellent as to enable us to dispense with this method of treatment. The use of chewing-gum at this stage has also been advocated with the idea of causing the secretion of saliva to wash out the duct system, but we feel that, once the gland is inflamed, the principle should be, as elsewhere, "rest to the inflamed part"; therefore we do not advise it when once the parotitis is established. We have seen hot fomentations widely used in parotitis, but since using X-ray therapy we have dispensed with them.

Operation.—In the practice of most surgeons operation for acute parotitis is limited to waiting for an abscess to form and then incising it, and the results on the whole have not been good. Payne (1938) has advocated a method which appeals to one as right in principle but not too satisfactory to apply to the gravely ill patient in whom we generally see parotitis. He uses Lilienthal's incision, which passes from the ear down over the angle of the jaw, he turns forwards a skin flap, and then he makes radial incisions into the parotid fascia to relieve the tension.

Deep X-ray therapy.—In view of the unsatisfactory state of the treatment of parotitis, it was with considerable quickening of interest that we read of the use of radiotherapy in America. Hodges (1936) has strongly recommended the use of X rays in parotitis and other infective conditions, and at the Mayo clinic the results of radiotherapy justified the following remark of Eusterman and Balfour (1936): "The use of radium on the infected parotid gland has completely changed the status of this complication." We decided therefore to use radiotherapy in such cases in the Leeds General Infirmary.

CASE-RECORDS

CASE 1.—Four days after an operation for perforated duodenal ulcer the patient developed an acute parotitis with much pain and trismus. He was treated from the first day with deep X rays. Complete resolution took place without suppuration. He soon obtained much relief from the pain and trismus. This was our first case, and we were much impressed by the perfect result.

CASE 2.—A woman, aged 79, admitted with a strangulated umbilical hernia, for which Mayo's operation was performed under local anæsthesia. On the fifth day she developed parotitis, for which she immediately received X-ray treatment. The condition gradually became localised, and an abscess was opened on the twentieth day. She was discharged to a local hospital on the forty-third day and made a complete recovery.

CASE 3.—A man, aged 56, with inoperable carcinoma of the cæcum, for which a short-circuiting operation had been performed. He developed parotitis on the fifteenth day. He was treated immediately with X rays, with the result that the parotitis settled down by the eighteenth day and completely resolved without suppuration.

CASE 4.—A man, aged 63, who had a partial gastrectomy for anastomotic ulcer. On the ninth day he developed acute parotitis, which resolved completely after treatment with X rays.

CASE 5.—A man admitted with general peritonitis due to a perforated tuberculous ulcer of the small

intestine treated by suture and drainage. On the sixth day he developed parotitis. X-ray treatment given on the sixth, seventh, eighth, tenth, and eleventh days. The parotitis settled, but on the twenty-sixth day the patient died of tuberculous peritonitis, tuberculous enteritis, and bronchopneumonia.

CASE 6.—A man, admitted to a medical ward with hæmatemesis, developed parotitis on the sixth day. X-ray treatment was not given until the tenth day. The gland was incised on the fourteenth day and discharged profusely. Suppuration spread, and on the forty-third day the patient had a secondary hæmorrhage, for which the external carotid had to be ligatured, and he died shortly afterwards.

This case is noteworthy because the X rays were not used until the parotitis had been present for four days, and it illustrates the important fact that X-ray treatment, unless it is given immediately, is of very little value.

CASE 7.—A man who had received radium treatment for a carcinoma of the right cheek in 1938. Crile's operation had been performed on Feb. 9, 1939. Severe pulmonary collapse developed, and was treated on the 13th by bronchoscopy and aspiration of mucopus from both lower-lobe bronchi, with much improvement in air entry. On the eleventh day the patient had a very septic mouth, with ulceration of soft palate and back of the tongue and acute parotitis on the side of the original carcinoma, with an erysipeloid appearance of the skin over the parotid. The opening of Stensen's duct could not be seen, because of the scarring of the cheek. The patient was treated immediately with deep X rays and completely recovered without suppuration and with early relief of pain and trismus.

CASE 8.—The patient had been operated on for appendicitis with peritonitis and had developed a paralytic ileus. Parotitis appeared on the twenty-second day, starting as a localised inflammation in the part of the gland behind the angle of the jaw, with at first no redness at the orifice of Stensen's duct ; therefore some doubt was at first felt about the diagnosis. Later, pus could be squeezed from the duct. X-ray treatment was given on the twenty-fourth, twenty-fifth, and twenty-eighth days. The parotitis settled down except for a small fluctuant area ; this was not opened, because of the patient's general condition. Ileocolostomy was performed on the forty-third day, and the patient died on the forty-fifth day. Post mortem a pelvic abscess was found, with obstruction of the terminal ileum, metastatic bilateral pneumonia, and early empyema.

This is another case in which X rays were not used at the very beginning of the parotitis. We think that this delay may perhaps explain the less satisfactory result.

CASE 9.—A girl, aged 22, had a painful swelling in the left parotid region on Oct. 22, 1937. She was admitted to hospital a week later, and the gland was incised the next day. X-ray treatment was not given until ten days after parotitis had begun ; therefore this case is only included for the sake of completeness. The patient was discharged on the twenty-fourth day.

CASE 10.—The patient was admitted with acute parotitis of two days' duration and of unknown cause. X-ray treatment was given next day, resolution took place, and he was discharged on the fourth day.

CASE 11.—The patient had had a gastro-enterostomy for severe pyloric stenosis due to chronic duodenal ulcer. Severe postoperative hæmatemesis was treated by continuous-drip blood-transfusion. Parotitis appeared on the third day and was treated immediately with deep X rays, with striking improvement and complete resolution without suppuration.

TECHNIQUE AND RATIONALE OF X-RAY TREATMENT

Following the advice of Hodges (1936) we have used a small dose, generally 100 r daily or 200 r on alternate days to a skin field sufficient to cover the swelling. The total dose has been 500–600 r to the skin, equivalent to about 300 r to the deepest part of the parotid gland. In most cases the treatments were given at 200 kV, 1 mm. copper filter, and F.S.D. 23 cm. The most important point about X-ray therapy is that it should be given immediately —within a few hours of the appearance of the parotid swelling.

The great difficulty, in the history of the X-ray treatment of infections, which has hitherto made us, in common with the rest of the medical profession, sceptical of its value, is to explain how it works. There are many theories, none of which seems entirely satisfactory. The explanation which is most believed in, and which is endorsed by Allen (1938), is that the radiation destroys the leucocytes, especially the lymphocytes, infiltrating the lesion and thus liberates antibodies, ferments, and other protective substances, making them more readily available for defensive purposes than when contained in the intact leucocytes. It has been well established that the dose usually given is too small to have a direct bactericidal effect.

It is also generally believed to be too small to depress the activity of the gland and rest it, but observation of our later cases has shown absence of secretion on the affected side for as long as a fortnight after the swelling had subsided.

SUMMARY

Deep X rays were used in the treatment of 11 cases of suppurative parotitis. In 7 cases treated immediately, complete resolution took place in 5, resolution after incision of a local abscess in 1, and in 1 resolution was taking place when the patient died from other causes. In 2 cases treated after two days, 1 resolved completely and 1 formed a local abscess. In 2 cases treated late in the course of the parotitis X rays had little apparent effect.

We wish to thank the honorary surgical staff of the General Infirmary at Leeds for their kind permission to treat and publish these cases.

REFERENCES

Allen, M. L. (1938) *Surg. Gynec. Obstet.* **67**, 393.
Cope, Z. (1919) *Brit. J. Surg.* **7**, 130.
Eusterman, A. B. and Balfour, D. C. (1936) The Stomach and Duodenum, London, p. 883.
Hodges, F. M. (1936) *Amer. J. Roentgenol.* **35**, 145.
Payne, R. T. (1938) *Proc. R. Soc. Med.* **31**, 398.

SUBDURAL HÆMATOMA

BY W. LEES TEMPLETON, M.D. Glasg.
ASSISTANT PHYSICIAN AND REGISTRAR AT THE LONDON HOMŒOPATHIC HOSPITAL

TROTTER'S (1914) classical description of chronic subdural hæmorrhage of traumatic origin and its relationship to pachymeningitis hæmorrhagica emphasised the importance of almost negligible traumata in the production of this condition, but it is only recently that attention has been drawn to the fact that all such cases are acute at one stage, and that many of the most severe types never reach the chronic stage and are therefore rarely recognised at a time when operation might be successfully undertaken (Putnam and Cushing 1925, Munro 1934).

In the following case of acute subdural hæmorrhage some of the classical signs were present.

CASE-RECORD

A woman, aged 71, was admitted with a history of having fallen down some stone steps, where she was found two hours later. She was then conscious but

remembered nothing except that she had felt giddy before she fell. The right side of her face was badly bruised and swollen, and she had a compound Colles's fracture of the right radius. Temperature 99° F., pulse-rate 92, respiration-rate 20. No other injuries were noted, and she complained only of pain in the head and the wrist.

Next day, ten hours later, she was taken downstairs to the X-ray room, where she complained of nausea and fainted. There was no vomiting and no twitching. She was unconscious, and then it was noted that at first the right leg and then the left was spastic, and an extensor reflex was elicited on both sides, the right first and then the left. There was a facial weakness on the right side. Lumbar puncture was performed and some bloodstained cerebrospinal fluid drawn off, which, however, was not under pressure. During the period of unconsciousness there was incontinence of urine and fæces.

Seven hours later she regained consciousness and could chat to the nurses, swallow, and discuss her case. She still complained of headache, particularly over the right side of the head, but made no great fuss about it. All the physical signs except the facial weakness had gone. The pupils were semidilated and active. The plantar reflexes were flexor, and there was neither spasticity nor apparent weakness of the limbs.

Twelve hours later, as she was being assisted on to a bedpan, again she became unconscious, both legs were spastic, and there was a double Babinski. The left arm was also spastic, but the right, being splinted, was difficult to test. The pupils were equal and active. She gradually became more comatose and died eleven hours later. The blood-pressure at the time of the second seizure was 210/90 and rose six hours later to 240/100.

At necropsy there was found a large subdural hæmatoma covering the greater part of the right cerebral hemisphere. It was composed of clotted blood; hence, when the brain was tilted, it slid right off. When the hemisphere were pulled apart, the clot seemed to be connected with a thin layer of clot lying along the inner face of the hemisphere and leading to a point anterior to the pons, but the exact source of bleeding was not found. There was no blood in the posterior fossa, as might have been expected if bleeding had originated from any of the vessels on the posterior surface. The basilar artery and the circle of Willis seemed to be healthy. No fracture of the skull was found.

COMMENTS

The striking features of the case were (1) the sudden lapses into coma, with bilateral spasticity, and the equally sudden recovery of consciousness and disappearance of physical signs; (2) absence of laceration of the brain and of fracture of the skull; (3) no definite source of bleeding in spite of so large a clot; and (4) a subdural hæmorrhage on the right side. The first three features are those described in chronic subdural hæmorrhage, and the published reports seem to justify Munro's (1936) statement that the so-called chronic subdural hæmatoma is only the last stage of an unrecognised earlier acute form, of which the above-mentioned case is an example. It is possible that, if such cases were recognised earlier, operation might prove successful.

Munro reported that of 22 patients not treated surgically all died, whereas of 39 operated on only 16 died.

The signs and symptoms of subdural hæmatoma are, he says, the same as those caused by any other severe injury of the brain, and it is estimated that subdural hæmatoma is present in a sixth of all cases of severe injury of the head. But some features are typical of the subdural syndrome; the chief of these is undoubtedly a latent period, which may be short or long, and as long as six years in the chronic cases. At some time or other during this latent period mental changes are noticed by the patient's friends and relations, but both the latent period and the mental conditions are of much greater importance in the chronic state than in the acute.

Munro bases his diagnosis on (1) a history of injury of the head with subsequent loss of consciousness; (2) headache; (3) later mental changes; (4) abnormal signs on physical and neurological examination; (5) paralysis of one facial nerve; (6) a bloodstained cerebrospinal fluid under pressure; and (7) a short or long latent period free from symptoms. If no improvement follows treatment by dehydration and lumbar puncture, the diagnosis, he feels, should be confirmed or excluded by exploratory bilateral subtemporal trephining.

Kunkel and Dandy (1939) describe remarkably varied symptoms in a series of 48 cases, mostly chronic but including several with less than a week's history from the time of the original injury. A history of injury was obtained in 32 cases; in many of them the symptoms dated from the time of the injury without a latent period. Central facial weakness was present in 8, being in 1 on the homolateral side, as in my case. Papilloedema was noted in 25 and a Babinski in 21, being bilateral in 13. In only 11 was the diagnosis made before operation. Kunkel and Dandy claim that ventriculography is the most exact method of diagnosing the condition. The chief symptoms, in order of frequency, are papilloedema, increased reflexes, Babinski, facial weakness, hemiparesis, coma, and retinal hæmorrhages. In 19 cases the diagnosis was tumour of the brain, and it seems that the history of injury in such chronic cases must be reckoned as of the utmost importance in reaching a diagnosis, because in 15 there was a definite history of severe injury of the head. It is true that trauma is often an exciting event in the production of symptoms in tumour of the brain, but the diagnosis of subdural hæmatoma should have the benefit of the doubt owing to its curability by trephining.

There is no other condition in which the sudden onset of coma followed by an equally sudden return to consciousness, with disappearance of physical signs, is so striking or common (Stewart 1937). The ocular, including the pupillary, signs are considered to be due simply to compression of the midbrain and are therefore of little or no value as focal signs. The so-called latent period is thought to vary with the severity of the trauma and in the acute state may last several hours only (Martin 1930–31).

SUMMARY

(1) Subdural hæmorrhage may cause signs by which it may be diagnosed in the acute stage.

(2) The most severe cases are usually fatal if left untreated.

(3) Early operation seems to offer a 50 per cent. chance of recovery.

(4) Operation in cases with a fracture of the skull and laceration of the brain tissue is not considered to diminish the chances of recovery.

(5) The incidence of such injuries is on the increase owing to motor accidents and will further increase if bombing raids take place.

(6) The suggested operation is a bilateral subtemporal trephining, because many cases are bilateral.

REFERENCES

Kunkel, P. A. and Dandy, W. E. (1939) *Arch. Surg.* **38**, 24.
Martin, J. P. (1930–31) *Proc. R. Soc. Med.* Neurol. sect. 24, p. 585.
Munro, D. (1934) *New Engl. med. J.* **210**, 1145.
— (1936) *Arch. Neurol., Chicago*, **35**, 1.
Putnam, T. J. and Cushing, H. (1925) *Arch. Surg.* **11**, 329.
Stewart, J. P. (1937) Diagnosis of Nervous Diseases, London, 8th ed., pp. 130, 133.
Trotter, W. (1914) *Brit. J. Surg.* **2**, 271.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF PROCTOLOGY

AT a meeting of this section held on March 6 the chair was taken by Mr. J. P. LOCKHART-MUMMERY, who opened a discussion on

War Wounds of the Large Intestine

Those who took an active part in dealing with war casualties in 1914–18, he said, were now too old for active work, and a new generation would find that the methods used in peace-time needed very considerable modification for war conditions. He hoped to point out some of the snags that would have to be avoided. Possibly the lessons of the last war would not apply to this one. War casualties differed from peace-time ones in that the patients when first seen were badly shocked, and their wounds were grossly infected and often contained large masses of foreign material. On the other hand, the men were young and in excellent condition; air-raid mortality would be very much higher than among the troops. Immediate operation should be available for all casualties and should be easier to organise in cities than at the front. The current arrangements, however, seemed to secure the maximum instead of the minimum time between injury and operation for city air-raid casualties.

War wounds involving the large gut fell into two categories: those seen early, and those seen when evacuated home. The mortality was very high; out of a group of sixteen cases only two reached England. The principal factors causing death was damage to the retroperitoneal tissue, and the only hope seemed to lie in immediate operation. Expectant treatment had given a mortality of 70–80 per cent; immediate operation had reduced the figure to 50–60 per cent. With so high a mortality the technique could hardly be regarded as successful. In the early days of the last war there had been a tendency, he thought, to attempt too much at the primary operation; as little as possible should be done and that very quickly. A colostomy should be established in the transverse colon, of such a type that it could be closed with an enterotome. A Paull's colostomy took no longer to do and was far easier to close than other types. An amazing variety of foreign bodies had been found in the wounds; many of them were best left alone. Secondary hæmorrhage was a grave problem. A strange injury of the rectum, of which five examples had been recorded, was complete blowing away of the anal opening; the rectum and anus having retracted right up into the body. Possibly this was due to air concussion. It was not serious, but looked shocking. Not all wounds of the rectum required operation, but their distinction was difficult. Bullets might go right through the gut without damage; small wounds sealed themselves during the few hours of complete gut paralysis which followed any injury. Most of the cases which reached London showed fæcal fistulæ, colostomy or damage to the anus causing incontinence. During heavy fighting, earlier cases reached home, and several fæcal fistulæ were not infrequently seen in one patient. The most effectual principles in these cases were to free the intestine completely and make the junction with perfectly healthy gut. The best way to close the opening in the abdominal wall was to cut away all scar tissue and slide in large pieces of tissue to fill the gap. It was surprising how well the patients did. Any attempt to restore damaged parts or to re-establish normal function was best left until all sepsis had cleared up and the wounds were soundly healed. Restoration of parts should be done at once or left till all wounds had healed; operations in the intermediate phase should be confined to drainage of septic areas, removal of foreign bodies and a double-barrelled colostomy. Only healthy tissues should be used in plastic operations and any kind of tension should be avoided like the devil.

Sir CHARLES GORDON-WATSON said that colon wounds were usually associated with wounds of the small gut and other viscera; if isolated, the prognosis was good. Every wound had to be dealt with once the abdomen was opened. Multiple abdominal injuries had a very high mortality due to fæcal extravasation, hæmorrhage and retroperitoneal damage. Colon wounds were usually large and ragged. Wounds of the extraperitoneal surface and of the flexures were often unrecognised. Colon wounds were often complicated by wounds of the spinal column and cord. The splenic angle was very difficult to get at and wounds here were often complicated by damage to the diaphragm, spleen and pleura. Many severe cases had recovered after operation at an advanced hospital. Suture of the colon always needed a double layer of stitches and, if possible, an omental graft. Long paramedial incisions had been usual, but some operators had used the transverse incision. A long opening was necessary for multiple wounds. Retroperitoneal gas infection was a frequent cause of death and emphasised the need for lumbar drainage in wounds of the fixed colon. Rectal wounds were often complicated by wounds of the bony pelvis, bladder and buttock. Buttock wounds often injured the rectum—a fact which was sometimes missed. The mortality of rectal wounds was very high, due to extravasation and hæmorrhage followed by infection. Drainage through the perineum was often necessary, and the sphincter should be divided and a large tube put in for wounds of the extraperitoneal part. Transverse colostomy was advisable for severe rectal wounds. Some of the worst cases, regarded as inoperable, occasionally recovered, but had to be given enough morphia to inhibit all reflexes and all intestinal movements, and to reduce respiration to the point of death. Better results in this war might be anticipated from the great advances in anæsthesia, the blood transfusion service, the reduction of infection by early use of sulphanilamide, and the use of the sucker to clear the field and so accelerate the operation. Time was of the essence in these cases.

THE NEED FOR COURAGEOUS SURGERY

Surgeon Rear-Admiral G. GORDON-TAYLOR thought that there was an impression that abdominal surgery was not worth while. He thought it was. He had a great respect for surgery of the large intestine. It had proved a very vulnerable structure and its surgery had often been doomed to failure for a number of reasons. Mere suture might be very precarious, owing to devitalisation of the wall, extravasation and hæmorrhage. Small injuries had done well with double suture. In most cases, however, more ought to be done than suture. Where the bowel was badly damaged the surgeon should excise. Gangrenous ulceration of the mucous membrane of the rectum usually followed indirect injury and took place very rapidly and the cases were desperately fatal. Many

of these wounds were complicated by damage to other viscera. Plurivisceral wounding always increased mortality. An osseous lesion complicating a rectal wound also added to the mortality. Some cases, however, recovered, even after transvesical operation on the rectum. Many foreign bodies retained in the pelvis proved to be intravesical and the surgeon operating in this region should always make sure that there was no foreign body left. Colostomy was extremely useful in cases where the suture line was doubtful and in low rectal wounds, if it was done early and adequate drainage was provided. In some cases of extensive damage the surgeon should be courageous and deal radically with shattered, infarcted pieces of intestine.

Prof. G. GREY TURNER said that patients must be given the opportunity of recovery that only surgery could offer. There must be a very free exposure; a really large free opening in the middle line was best. A complete diagnosis must be made before any one lesion was dealt with—always excepting the arrest of hæmorrhage. Damage in gunshot wounds was much more than mere puncture, especially in the part of the colon uncovered by peritoneum. Resections must be large. A partial suture might always be made and the front left open, if attached to the abdominal wall opening. It was important not to be too particular to make a complete job. After the midline diagnostic incision, a second incision could be made right over the damaged part. A living problem was always better than a dead certainty. A temporary colostomy might be of great value, combined with drainage, in rectal injuries. Drainage must be from behind; and removal of the coccyx was important. The patient must not lie with fæces and pus accumulating in a granulating wound; his position must be given attention. Irrigation must be thorough, not trivial. If there were multiple fistulæ it was a mistake to keep the evacuations liquid; they get down better if kept normal.

DISCUSSION

Mr. G. T. MULLALLY said that he had had to deal with recent cases in the last war. It was much more difficult to find wounds of the large intestine than wounds of the small intestine; the colon mucosa did not bulge out, fat might obscure the wound, and if there were no peritoneum over the lesion the bowel did not even gape. The smell was the best indication of a wound; wounds of the large intestine always leaked, because it did not get paralysed in the same way as the small gut. Once infection gained hold in the retroperitoneal tissues, the patients always died. He did not agree that frequent resections should be performed; the operation carried a considerable amount of anxiety. He preferred suture. The holes could not just be sewn up; infection had always taken place and the extent of damage was difficult to estimate. At autopsy the bowel might be found sloughed for an inch or two above and below sutures that were holding well. Drainage must be freely established, with big holes.

Mr. W. TURNER WARWICK spoke of experience since the last war. He thought the small intestine could be sutured quickly and agreed with Mr. Mullally about the large intestine. The double-barrelled operation was the best temporary colostomy that had been invented. For multiple wounds he would use the upper wound in the colon as exclusion (modern "temporary") colostomy, and suture and drain the rest. One of the best ways of resting the abdomen was to keep the stomach empty and feed by the blood; this diminished mortality.

Mr. W. B. GABRIEL asked what clinical or other evidence there was of injury to the rectum in buttock wounds; could it be diagnosed by rectal finger, air injection or sigmoidoscope? Was it ever advisable to cut the anal sphincter? If there were good posterior drainage, especially after removal of the coccyx, he would hope that it was very rarely necessary to divide such an important muscle.

Sir CHARLES GORDON-WATSON said he had had no hesitation in cutting the sphincter and converting the rectum into a cloaca to ensure free drainage in wounds of the ampulla of the rectum.

Mr. ASLETT BALDWIN recorded the case of a man with gunshot wound of the left loin who had been out four days before being found. He had had a large fluctuating swelling in the right loin. A temporary colostomy had been done and two tubes put into the right iliac fossa abscess. The whole thing had healed up without trouble. The colon had been repaired by cutting a small flake of skin all round the wound and suturing through that.

Mr. C. NAUGHTON MORGAN appreciated the importance of draining the rectum, but still did not think the sphincter should be divided in all cases.

Mr. MICHAEL SMYTH thought mortality should be improved by blood-transfusion, suckers and other modern equipment, but asked if the military hospitals would be adequately supplied with these things. He agreed that decentralisation of the home hospitals was not a desirable preparation for air-raid casualties.

Lieut.-Colonel J. H. BARRETT said he had been assured that the equipment at the base hospitals would include modern genito-urinary suction apparatus.

The PRESIDENT said that war surgeons must be courageous. He would have thought the transverse incision would be very useful for multiple injuries; he did not know why surgeons were afraid of it. It gave rapid, free access, with no untoward after-effects.

SECTION OF OTOLOGY

AT a meeting of this section on March 1, with Dr. T. RITCHIE RODGER in the chair, a discussion on

Functional Deafness

was opened by Sir ARTHUR HURST. He said that in order to hear it is necessary to listen. If for any reason a person believes he cannot hear he ceases to listen, and hysterical deafness develops. The commonest cause is organic deafness of a temporary nature, and when the patient recovers from this he still does not listen and therefore remains deaf. Analysis of cases of which Sir Arthur Hurst had charge in the last war showed that complete bilateral deafness following a shell explosion is usually hysterical, even if the drum is ruptured and there is hæmorrhage into and trauma to the middle ear. He also found that hysterical deafness is most frequent in otherwise normal men with no other symptoms and no history of neurosis. When acquired deafness is associated with mutism or tremor it is nearly always hysterical. He thought that other hysterical stigmata, such as anæsthesia of the auricle, are usually the result of unconscious suggestion by the leading questions of the observer. When the deafness is not absolute a tuning fork can still be heard by bone conduction; when it is absolute nothing can be heard either by air- or bone-conduction, and, moreover, the deafness persists during sleep—it is impossible to wake a patient by the loudest noise. It also persists under hypnosis, and it is therefore impossible to use hypnosis as a method of treatment. The auditory-motor reflexes, movements of the pinna and eyelids, and so on, are lost.

The timbre and intonation of the voice occasionally change, but much less often than in organic deafness. Many of the patients teach themselves lip-reading with remarkable rapidity. One of the pathognomonic signs is the persistence of the normal responses to the caloric and rotational vestibular tests, whereas these are nearly always disturbed in severe organic deafness. These patients can be cured by teaching them to listen, and he felt that suggestion in any form should be unnecessary.

Dr. EMANUEL MILLER agreed with Sir Arthur Hurst that the cessation of listening was the crux of the problem. However, there are cases which enter more deeply into psychical structure. Disease of any organ is connected with a special mental attitude, and in more organised types the process goes from the mind (or brain) to the peripheral organ. In all cases of the functionally deaf there is a denial of the external world. The denial is expressed in the sensory channel through which the undesirable stimulus is likely to come. The mood at the time of the trauma may be responsible for this subsequent rejection of a phase of experience. This prodromal period was recorded by certain of his patients. Apart from hysterical primary deafness all other mature forms are far from absolute. They select certain tones, distant sounds or voices. They may be tolerant of the telephone but not of the direct voice. They may be deaf to the tone quality of a foreign language, and he quoted a case of this sort. The onset is usually abrupt unless there is an associated organic disability of minor intensity. He cited cases to illustrate the personality reactions which determine functional deafness. They illustrate the central fact that a sense is inhibited in order to ward off an insult or affront to the personality—it is an escape. This may take place at the lowest instinctual level or at any higher level. In long-standing cases paranoid characteristics are shown. In this group he had not found re-education of listening successful.

REVIEWS OF BOOKS

Essentials of Medical Treatment

By DAVID MURRAY LYON, M.D., D.Sc. Edin., F.R.C.P.E., professor of clinical medicine, University of Edinburgh; physician, Edinburgh Royal Infirmary. Edinburgh: Oliver and Boyd. 1939. Pp. 448. 15*s*.

THE medical curriculum has been criticised for its discontinuity and the isolation of its several subjects in watertight compartments. Teachers sensitive to this criticism are making various attempts at breaking down the bulkheads and coördinating all the student's masses of learning. The curriculum has also been criticised for its insufficient emphasis on practical therapeutics, and the G.M.C. has recommended special instruction in therapeutics as a compulsory part of the undergraduate course. Perhaps this is in part responsible for the recent vigorous flow of new books on treatment. But this tendency to lift the treatment paragraphs, metaphorically speaking, out of the textbook of general medicine, and write them up into a separate book, surely conflicts with the argument that continuity of thought between the subjects of the curriculum is desirable. If treatment is to be rational and not rule-of-thumb, surely its discussion should follow closely on the textbook discussion of pathology, signs and symptoms. Or is it argued that the textbooks are so neglectful of this important aspect that it needs separate statement in simple, clear and modern fashion?

Prof. Murray Lyon's book provides such a statement. It is sound, well-written, and fairly short. It is not afraid of being elementary. Judicious repetition helps to make the common drugs and their doses familiar—familiar, moreover, by the contracted Latin names so often on the lips of students and residents. It is nearly but not quite up to date: sulphapyridine, for example, is given no credit in the treatment of meningococcal meningitis. It mentions drugs of little merit surprisingly often, but usually to damn them with faint praise, or disparage the claims that have been made for them: this is a wise attempt to protect the student early against the insistence of the uncritical enthusiast and the medicine-vendor. An appendix deals with the commoner technical procedures of a medical ward and gives a table of doses. Throughout, the broad principles of wise therapeutics are evident behind the detailed recommendations and suggestions given.

Minor Surgery

By R. J. MCNEILL LOVE, M.S. Lond. F.R.C.S., surgeon, Royal Northern and Metropolitan Hospitals. London: H. K. Lewis and Co. 1940. Pp. 369. 12*s*. 6*d*.

MINOR surgery has been the subject of many books, and while their scope varies they are all designed for the use of house-officers and general practitioners. It is, however, doubtful whether house-officers are not better taught elementary craftsmanship by example than by textbook, and general practitioners who practise surgery should have had a training which puts them beyond the need of such books. Be that as it may, Mr. Love's book is a good one of its kind—it keeps within the limits of its title, it is clearly, if dogmatically expressed, and the more important procedures are set out fully and in a practical way. There are 155 illustrations, but, while those illustrating the techniques described in the text are obviously useful, others, such as those of catheters and simple anæsthetic apparatus, seem to serve little purpose in a book for qualified medical men. Print, paper and size are all that could be desired, and the book will no doubt prove popular with those who have had little opportunity of practical training in minor surgery.

The Care of Young Babies

By JOHN GIBBENS, M.B. Camb., M.R.C.P., medical officer to the Babies' Club, Chelsea; late chief assistant to the children's department, St. Thomas's Hospital. London: J. and A. Churchill. 1940. Pp. 169. 3*s*. 6*d*.

THIS short book is intended primarily for mothers, but both children's nurses and doctors in family practice will find a great deal of useful information in it. Dr. Gibbens is an apostle of sanity, moderation and elasticity in the rearing of children. His outlook is cheerful and robust and he clearly takes delight in cheerful and robust babies, of whom some heartening photographs appear in the text. The book begins with good advice about the hygiene of pregnancy, including some to husbands, and about the nursery and its furnishings. A brief account of normal infant development is followed by two admirably practical chapters on breast-feeding. The thorny and tangled subject of artificial feeding is dealt with firmly but practically in one short chapter, being much simplified by the author's whole-hearted advocacy of simple mixtures of boiled milk, sugar and water. The use of

dried milks is also briefly described. Chapters on early mixed feeding and weaning are followed by one on "nursery routine," containing some excellent advice on the encouragement of good habits and against the almost obsessional anxiety to impose strict control of bladder and bowel on babies of tender age. Later sections are concerned with details of management in health, the care of the premature baby and of twins, minor ailments, travelling with young children and the choice of a nurse. There is a good appendix of cooking recipes for the young child. Dr. Gibbens is free from fads and is careful to teach confidence and not to provoke alarm. Occasionally he is perhaps overdogmatic or seems to under-estimate difficulties. "Lie about in the sun whenever you can" is dubious advice for the pregnant if taken literally. Some will doubt whether the balcony is indeed the best place for a baby with an acute cold in the head, and whether if the newborn baby is first put to the breast only "some time during the first two days" he may not risk missing the tide altogether. But such points are rare.

The book is based unmistakably on the clinical experience of an open-minded and observant practitioner with a real enthusiasm for healthy children; the family doctor may confidently recommend it to mothers without the fear that he will have either to explain or explain away its teaching.

Hereditary Ataxia and Spastic Paraplegia

By JULIA BELL, M.A., F.R.C.P., under the Medical Research Council; assisted by E. ARNOLD CARMICHAEL, M.B., F.R.C.P., director of the neurological research unit, National Hospital, Queen Square, London. Being part 3 of Vol. IV of the "Treasury of Human Inheritance." London: Cambridge University Press. 1939. Pp. 281. 17*s.* 6*d.*

IN this series are accumulated in the course of years our knowledge on the inheritance of rare and common, pathological and normal conditions. The present volume is one of the most stimulating. In it Dr. Bell has collected all available records of pedigrees of Friedreich's ataxia, spastic ataxia, and spastic paraplegia from the literature and has made with Dr. Carmichael's assistance a most valuable addition: an independent investigation of an unselected series of cases from the National Hospital and the Maida Vale Hospital.

Though all the conditions investigated are hereditary, there is no support for assuming any specificity of the factors responsible. In other words, Friedreich's ataxia, spastic ataxia, and spastic paraplegia are most probably differing manifestations of the same hereditary disease. In some families this morbid tendency appears to follow a recessive, in others a dominant inheritance; and whereas in spastic ataxia and paraplegia the number of families of each type are about equal in number, with a slight excess of the dominant type, in Friedreich's ataxia the situation is reversed, and the families showing recessive inheritance largely outnumber those showing dominant inheritance. There is no difference in symptomatology or course between the dominant and recessive types. As one would expect, the recessive cases tend to show an earlier onset, and come with much more than normal frequency from consanguineous marriages. There seems to be a possibility here that a large number of cases of both dominant and recessive type, irrespective of whether manifestation occurs as a Friedreich's or a spastic ataxia or as spastic paraplegia, may be due to a single weakly dominant gene, whose manifestation is greatly influenced by other genetic and possibly environmental factors, and is much enhanced when it is present in the homozygous state. The wide range of expressivity found by Dr. Bell would be compatible with this possibility, and would help to explain the great apparent departure from mendelian ratios shown in her material.

Dr. Bell has also used her material fully to provide statistical data on the age of onset, course, duration and symptomatology of the disease. Her work represents a valuable addition to our knowledge.

Demonstrations of Physical Signs in Clinical Surgery

(7th ed.) By HAMILTON BAILEY, F.R.C.S., surgeon, Royal Northern Hospital, London; surgeon and urologist, Essex County Council. Bristol: John Wright and Sons. 1940. Pp. 310. 21*s.*

THIS book is unique in the English language and has been translated into German, Italian, Portuguese and Dutch. The present edition has been made better still by the addition and substitution of new illustrations which are beautifully reproduced. An interesting and acceptable innovation are the footnotes on the proper names attached to various signs described. This is a book that every student should buy and keep.

Tumors of the Hands and Feet

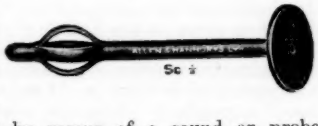
Edited by GEORGE T. PACK, M.D., F.A.C.S., assistant clinical professor of surgery, Yale University school of medicine and Cornell University college of medicine; attending surgeon, Memorial Hospital for Cancer and Allied Diseases. London: Henry Kimpton. 1939. Pp. 138. 15*s.*

THIS is a well-produced and beautifully illustrated symposium. In view of the complex anatomy of the hands and feet it is interesting to reflect on the multiplicity of tumours that may arise. We find here tumours arising in skin, in blood-vessels, in synovial membrane, in tendons and joint capsules, and in bones. Tumours of nerve tissue are not separately described. The technique of radiation therapy and the indications and contra-indications are clearly laid down. The chapter on melanoma is excellent, and contains details of 16 cases of subungual melanoma. It is made clear that dissection of the regional lymph nodes should never be omitted, and this combined with amputation should give a good prognosis. Glomus tumours are fully described, as is Kaposi's disease (idiopathic multiple hæmorrhagic sarcoma), but the common nævus is hardly mentioned, and the conservative treatment of the strawberry type is not discussed. The book can hardly have a general appeal, but should be useful to surgeons and radiation workers for reference.

New Inventions

UTERINE DRAIN AND DILATOR

I HAVE designed a rubber drain in place of the rigid stem pessary made of vulcanite or glass which is not always satisfactory. The drain is self-retaining by means of the slit end, and the rubber disc prevents its complete insertion into the uterus. The stem is hollow and it can be introduced by means of a sound or probe placed in one of the slits and the rubber head stretched length-wise. It is useful in cases of stenosis of the cervix after instrumental dilatation for dysmenorrhœa, and in cases of uterine discharge or septic abortion. The rubber adapts itself to the movements of the uterus. The instrument has been made by Allen and Hanburys Ltd., of 48, Wigmore Street, London, W.1.



LOUISE MCILROY, D.B.E., F.R.C.O.G.

THE LANCET

LONDON: SATURDAY, MARCH 16, 1940

YOUNGSTERS IN THE FACTORY

THOMAS CARLYLE said that there is a perennial nobleness and even sacredness in work. He did not say overwork and the Home Office white paper [1] on the hours worked by women and young persons in war-time tells of a salutary tendency since the last war to be noble and sacred for shorter and shorter periods. It describes how much better are the working conditions during the first five months of this war than those of 1914. Then it was legally possible (under the Factory and Workshops Act 1901) to keep women and youngsters of fourteen to eighteen at work for 60 hours a week in non-textile and 55½ hours in textile factories, and under stress of war the hours amounted in many cases to more than 70 a week. Boys of fourteen and girls over sixteen could be, and were in fact, employed at night.

Since that time hours of work have been gradually reduced until the Factories Act 1937 laid down the principle that no woman or person under eighteen should work more than 48 hours a week, and that no-one under sixteen should be employed for more than 44 hours, except in such industries as cotton and woollen textiles. To meet the demand for increased production in the present war, and to allow for immediate difficulties, substantial overtime was freely allowed for short initial periods. During this interregnum there were opportunities for reorganising the factories on a war basis and for factory inspectors to inquire into the merits and demerits of each case. After an interval the position was reviewed and it was found in many instances that overtime was no longer necessary. Again in some cases as much as 60 hours a week might have been worked at the beginning of the war, but the formal orders issued after inquiries had been made often reduced this figure to 57 hours for women and young people. In order to secure increased output, and at the same time to avoid the employment of workpeople for long hours during the day, various methods have been adopted. In some cases two 8-hour shifts are worked during the day, or three 8-hour shifts in 24 hours, or again a system of day and night shifts is worked entailing 54 hours a week by day and 50 at night. In many instances a condition of the order is that the firm should provide a mess-room and where necessary should arrange transport facilities for workers living some distance from the factory. In no case has authority been given for the employment at night of girls under eighteen or of boys under sixteen. Most of the orders have been granted to firms employed wholly or partly on war work, but in some cases firms working for the export trade have had special consideration. During the early weeks of the war many firms were allowed to work boys and girls under 16 up to 47 and 48 hours a week on urgent contracts, but rarely for periods longer than two months. In some trades such as engineering, foundry work, ship-building and repairing, it is alleged that refusal to allow lads to work longer than 44 hours a week would result in serious dislocation of the work and loss of output, especially where they act as assistants or as members of a team with older men. In such cases permission has been granted to the firms to employ these boys up to 47 and 48 hours in the week.

It is still a reproach that the hours of employment of men over eighteen are not regulated by law, but something has been gained in safeguarding the interests of women and youngsters to the present extent. Whether the allowed hours are still too long is a subject on which opinions vary, but the Industrial Health Research Board have shown that *excessive* hours of work do slow down output—and output is at present almost the only measure by which the effects of overwork can be estimated. No large-scale clinical investigations have as yet been made to determine the optimum hours that can be worked in various trades by average young people, or even by adult workers. It must be obvious on commonsense grounds that a child of fourteen cannot work as long as a youth of eighteen or even of sixteen—and whatever the legal definition there is no doubt that biologically a person of fourteen is still a child. In the absence of such investigations it is inevitable that the hours of employment of children allowed by the Home Office should have an arbitrary flavour about them in spite of the claim that their policy is "not to authorise hours which are found in the light of experience and of scientific investigation to be detrimental to health or efficient production." On a-priori grounds, and indeed from a knowledge of physiological principles, it is probable that the hours worked by children are still too long, and no considerations of increased production should enable employers to work them longer than the maximum hours at present prescribed by the Factories Act. We have no reason to doubt that the problem of regulating hours is now being tackled with energy and fairness, but if it is possible to look back on 1914 as the Dark Ages in factory labour conditions we are still only in the twilight which gives promise of a dawn.

1. Report on hours of employment of women and young persons in factories during the first five months of the war. Cmd. 6182, H.M. Stationery Office, 3*d*.

BISMUTH BY MOUTH FOR SYPHILIS

THERE have always been patients who, because of their work or the inaccessibility of regular medical attention, have been unable to submit to the long and rigorous routine which is essential in the treatment of syphilis. For such patients a potent antisyphilitic agent which was effective by mouth would be of considerable value, and a number of attempts have been made to find one.

Bismuth preparations were most promising because bismuth is less toxic than the arsenical compounds when given by routes other than the intravenous, and therefore its administration could be more safely left in the patient's hands for a limited period. The search seems at last to have been successful.

In 1937 HANZLIK, LEHMAN and RICHARDSON [1] introduced a preparation called Sobisminol, an organic compound of bismuth obtained by the interaction of sodium bismuthate, tri-isopropanolamine and propylene glycol and containing about 20 per cent. of bismuth metal. Experimental work indicated that this substance was readily absorbed from the gastro-intestinal tract and was tolerated in sufficient dosage to produce as large an excretion of bismuth in the urine as that which results from ordinary intramuscular injection of bismuth or its salts. Moreover, sobisminol taken by mouth seemed to be as effective as other bismuth preparations given intramuscularly in causing the disappearance of *Treponema pallidum* from surface lesions and in healing these lesions. Two recent studies by MEININGER and BARNETT [2] and by SCHOLTZ, MCEACHERN and WOOD [3] have confirmed these findings. MEININGER and BARNETT found that the optimum daily dosage was six capsules each containing 0·2 g. of the drug. In all 192 patients were treated but in only 143 of these was it possible to assess the antisyphilitic effect; 49 took their capsules irregularly or failed to coöperate in other ways. All were treated as outpatients, and it was therefore necessary to rely on the patients' statements as to how regularly the capsules were taken. Attempts were made to check this evidence by estimating the bismuth content of the urine and blood. The results varied widely and there was no discernible relationship between concentration of bismuth in the blood and therapeutic effect. The drug was well tolerated by almost all the patients. About a third of them complained of slight gastric disturbances, and a few had diarrhœa or transitory stomatitis, but in only 5 was it necessary to discontinue the drug because of severe gastro-intestinal reactions. Sobisminol alone was given for the first fourteen days to 14 patients with sero-positive primary syphilis and 37 with secondary syphilis and cutaneous lesions. Patients with sero-negative primary syphilis were given other remedies as well so as not to jeopardise the excellent prognosis which is the rule in such cases. In 11 cases of primary syphilis the sores healed in from two to fourteen days; in the other 3 healing was estimated as 90 per cent. after fourteen days. In 26 cases of secondary syphilis healing was complete in from four to fourteen days. In the remaining 11 the average degree of involution at the end of fourteen days was 70 per cent. Daily scrapings of the lesions were carried out in 33 cases and in 29 of them treponemata disappeared from the surface lesions in an average of about four days; in the other 4 the organisms were still present at the end of fourteen days. The routine adopted made it impossible to estimate the effect of the drug on the serum tests in these early cases. A further 28 patients with late cutaneous lesions were treated with sobisminol alone for from one to twelve weeks until healing was complete, and 73 with late syphilis of various kinds received the drug alone for periods of from four to seven months. No satisfactory assessment of these results was possible but positive serum tests were reversed in a few cases and some of the patients recorded subjective improvement. Comparison was made between a series of patients treated with Neosalvarsan and sobisminol and another in which intramuscular Iodobismitol was combined with neosalvarsan. No particular difference was found in clinical or serological response or in the proportion of later serological and neurological relapses. SCHOLTZ, MCEACHERN and WOOD regard four capsules, or 0·8 g. of sobisminol, as an adequate daily dosage. Their results in 90 patients corresponded roughly with those of MEININGER and BARNETT. Of their 3 patients with gummatous changes in bones or mucous membranes 1 failed to respond to this treatment but the other 2 healed in about forty days. Another group of 23 patients were suffering from various forms of late neurosyphilis. In most of these there was some improvement of symptoms and in 10 the symptoms were almost completely relieved.

No full assessment of any antisyphilitic drug is possible in less than a period of years, but most of the present evidence suggests that this bismuth preparation given by mouth is as effective as those given intramuscularly. There are obvious reasons why it is unlikely to replace its intramuscular counterparts for routine use. Too much reliance would have to be placed on the memory and intelligent coöperation of the patient, and regular skilled observation is essential to safe and effective antisyphilitic treatment. For the same reasons it would be unsafe if such a preparation were open to unrestricted purchase by members of the public. But given the proper restrictions there is an important though limited place for it in the treatment of seamen and the like, who because of their work are unable to obtain regular treatment, and those few in whom intramuscular bismuth produces enough local tissue reaction to cause serious discomfort or pain. Another possible field for this drug is in the treatment of inherited syphilis in young children.

1. Hanzlik, P. J., Lehman, A. J. and Richardson, A. P. *Amer. J. Syph.* 1937, **21**, 1.
2. Meininger, W. M. and Barnett, C. W. *J. Amer. med. Ass.* 1939, **113**, 2214.
3. Scholtz, J. R., McEachern, K. D. and Wood, C. *Ibid*, p. 2219.

MENIÈRE'S DISEASE

THE symptom complex of vertigo, tinnitus and deafness is a fairly common affliction, although it is not often disabling. Each of the symptoms can vary in intensity independently of the others and without relation to the prognosis—CHARCOT's dictum that the vertigo ceases when the deafness becomes absolute is a fallacy. The name "Menière's disease" was formerly attached to the condition although nothing was known of its morbid anatomy or pathological natural history, but later it was thought that a number of widely

differing causes could provoke the symptoms and the cautious physician and otologist began to favour "Menière's syndrome," or if giddiness was the most prominent feature "aural vertigo." The pendulum is now swinging back and the belief is growing that a large group of the cases are suffering from a clinical entity, a chronic progressive disease of the labyrinth, the remainder having more or less accidental lesions of that organ. Several independent methods of investigation—biochemical, clinical and histological—have been responsible for this reaction, and most of the information about the pathology has resulted from empiric attempts at treatment.

The first biochemical approach was made by S. H. MYGIND and DIDA DEDERDING, who have published their findings in a series of papers dating from 1924. They started with the premise that the disease resembles glaucoma and is a hydrops of the labyrinth; they therefore tried to relieve the acute attacks by a dehydrating regimen. In this they were often successful, but the treatment did not strike at the root of the trouble they postulated—namely, the cause of a localised accumulation of fluid in the labyrinths of patients with otherwise normal metabolism. However, a break with the surgical tradition had been more or less successfully made and an impetus given to thought and experiment along fresh lines. Adopting this same premise FURSTENBERG and his colleagues [1] showed that the administration of sodium salts to these patients, causing water retention, often precipitated attacks. They devised a treatment based on a diet poor in such salts with the periodical addition of ammonium chloride and obtained favourable results as did other otologists who tried it. TALBOTT and BROWN [2] have investigated the acid-base constituents of the blood in 48 patients before and after a period on this diet. In all but 4 (where the serum-potassium was raised and the sodium lowered) the concentrations of sodium, potassium, calcium, chlorides, carbon dioxide, phosphate, protein and non-protein nitrogen were found to be normal. In the 4 exceptions the blood was examined actually during an attack. These findings seem to rule out the idea that the symptoms are produced by gross retention in the body of water or sodium chloride, because if this were so one of three changes should be present. There should be an increase in the sodium and total fixed base concentration with an unchanged water and protein content; or a diminution of sodium and fixed base concentration with an increased water and protein content; or a decrease in concentration of protein without a change in the sodium and total fixed base concentration. To confirm their findings TALBOTT and BROWN deliberately produced the first of these conditions by administering massive doses of sodium salts to 4 patients without however succeeding in inducing an acute vertiginous attack. To explain the clinical benefits obtained with the diet they stressed the importance of the potassium content of the blood, since it has been observed to vary in certain diseases in which the conduction of nerve impulses is disturbed. In normal diets the proportions of sodium and potassium are about equal, but in the Furstenberg diet a relative increase in the potassium is unavoidable. Since this diet is therapeutically beneficial they investigated the effects of a normal one together with an extra amount of potassium. After eighteen months they were able to assert that this was a successful method of treatment. Its precise action is unknown. The conduction of a nerve impulse is perhaps associated with an optimum concentration of potassium. In 4 cases they found that during an attack the serum-potassium was high, indicating its loss from the tissues (by analogy with a high serum-calcium), and it seems reasonable therefore to try to compensate for this loss. In addition, the diuretic effect of potassium causes an increased excretion of sodium and water, reproducing the condition obtained by a low sodium diet and ammonium chloride. The clinical results were confirmed by WALSH and ADSON [3] and the method clearly has fruitful possibilities.

Clinical data have been provided by a number of workers. From observations on patients before and after division of the eighth nerve CROWE [4] concluded that the attacks in this disease are due to abnormalities both in the normal pressure and the chemical constitution of the endolymph. He suggests that the mode of action is excitation, a hyper-function of the labyrinth, but his argument is not convincing. However, he is certain that the symptoms are produced by a specific and common cause. WRIGHT [5] agrees, although he arrives at the conclusion by a different route. He has studied about 100 cases and has found a focus of sepsis in a large proportion of them. He believes that a bacterial intoxication of the labyrinth which he calls "focal labyrinthitis" results from this focus, and has found that eradication of the sepsis is followed by cure. Although other otologists have not observed so high a proportion of cases with septic foci they recognise that this type of case does exist and to this extent they confirm the validity of WRIGHT'S hypothesis. Again, DANDY [6] has divided the eighth nerve in whole or part (vestibular portion) in a large number of these cases without a single death and with almost uniform cure of the vertigo, although not always of the tinnitus. This places the origin of the symptoms in Scarpa's ganglion or in the labyrinth. CHEATLE suggested many years ago that decreasing the intra-labyrinthine pressure might cure the symptoms, as he was struck by the clinical resemblance to glaucoma. LAKE [7] demonstrated the accuracy of this deduction, and MOLLISON [8] showed that destruction of the labyrinth by alcohol cured the vertigo, although it

1. Furstenberg, A. C., Lashmet, F. H., and Lathrop, F. *Ann. Otol., &c., St. Louis*, 1934, **43**, 1035.
2. Talbott, J. H., and Brown, M. R. *J. Amer. med. Ass.* Jan. 13, 1940, p. 125.
3. Walsh, M. N., and Adson, A. W. *Ibid*, p. 130.
4. Crowe, S. J. *Medicine*, 1939, **17**, 1.
5. Wright, A. J. *Proc. R. Soc. Med.* 1937, **31**, 87.
6. Dandy, W. E. *J. Amer. med. Ass.* 1937, **108**, 931.
7. Lake, R. *Lancet*, 1904, **1**, 1567.
8. Mollison, W. M. *Proc. R. Soc. Med.* 1935, **28**, 1597.

also destroyed the hearing. These findings placed exactly the seat of the disease and showed that the intra-labyrinthine tension is an important factor, as well as possibly the chemical constitution of the endolymph.

An opportunity recently arose of correlating these biochemical and clinical observations with the morbid anatomy. Such an opportunity is rare, for the disease is not fatal and when death occurs from other causes there is rarely anyone at hand sufficiently interested or knowledgeable to secure helpful information. Here, however, 2 patients with these symptoms succumbed to the operation of intracranial division of the eighth nerve and their temporal bones were removed and examined microscopically.[9] The labyrinths of another patient dying of secondary hæmorrhage after an intranasal antrostomy were similarly investigated.[10] In each case the chief finding was a dilatation of the endolymph system affecting chiefly the scala media and saccule. In addition, the soft connective tissue surrounding the saccus endolymphaticus was absent, and this tissue is thought to be the site of absorption of the endolymph. The stria vascularis in the scala media (the supposed site of formation of the fluid) is relatively unharmed histologically and perhaps even less so functionally since its blood-supply is arranged so that it is protected against a rise of pressure in the duct. Thus a defect in the absorption rather than the production of endolymph is indicated as the cause of the raised tension. It is possible that the formation of an abnormal endolymph of high ionic concentration could lead to an increase in endolymphatic pressure by osmosis from the perilymph through the membranous walls. But in any case, once such a pressure exists anoxæmia of the end-organs will result with a lowered functional condition of the labyrinth. A relatively slight increase in volume of the endolymph would result in a very great increase in pressure, consequent asphyxia of the end-organs and thus an attack of vertigo. The material for examination is still scanty, but the argument is both consecutive and feasible. Applying these principles to treatment, we can choose between the diet suggested by FURSTENBERG and modified by TALBOTT and BROWN, and the various surgical methods, decompression of the labyrinth, its destruction, or intracranial division of the eighth nerve or its vestibular portion. It is perhaps wise to try the simpler and safer before proceeding to the more complicated and hazardous measures.

9. Hallpike, C. S., and Cairns, H. *Ibid*, 1938, **31**, 1317.
10. Hallpike and Wright, A. J. *Ibid*, 1939, **32**, 1646.

ANNOTATIONS

RATIONING OF MEAT

LAST Monday meat was added to the list of rationed foods. No-one can now spend more than 1*s*. 10*d*. in any week on what is called butcher's meat. A child under six can only have 11*d*. worth. The restriction will hit quite severely those of us who are in the habit of eating freely of sirloin and steak. There is an attractiveness about the more select parts of the bovine musculature, such as psoas and erector spinæ and even gluteus maximus. But as a seasoned broadcaster has already told the listening public the hardship is unreal, for the dietitian can make up a complete menu within the rationing scheme. The only real hardship has already been met by allowing the diabetic to exchange his unwanted sugar for an additional ration of flesh. Many kinds of animal protein are in fact not rationed at all: there is poultry and game for those who can afford it, rabbit and excellent fat fish for those who cannot. And there is always cheese. Pies and puddings and sausages are exempt if they contain no more than 50 per cent. of meat by weight and, for the first month at least, cooked meats will be sold free of coupons. Actually it seems doubtful whether, as in the case of bacon, people generally can afford to buy up to their total meat ration, and the enhanced price of the cheaper cuts and the edible offals is something of a calamity. One has a feeling that some readjustment may be necessary in the light of experience, or this last stage of rationing may press hardly on poorer folk. The physiologist might criticise the allocation from another angle. There should have been some consideration for age. Most people over 50 and all over 60 would have been better with half a meat ration; the other half might well have been allotted to the young adults in whom the urge to eat flesh is strong, especially when they live outdoor lives.

A NEW VASODILATOR

WHEN new substances with chemical structures allied to that of an active drug are studied by pharmacologists their actions are often found to be qualitatively similar to that of the original drug, but the results are more interesting when new actions appear. The study of a number of substances containing the iminazoline ring, which is similar to the iminazol ring in histamine, by Hartmann and Isler[1] has shown that 2 benzyliminazoline, which is known by the trade name of Priscol, has actions superficially similar to, but fundamentally different from, those of histamine. Like histamine, it dilates small blood-vessels and this action is illustrated very effectively in an article by R. Meier and R. Müller[2] of the Ciba laboratories by coloured photographs of the pads of a dog's foot, of a dog's nipple and of a rabbit's conjunctiva. When injected intravenously, priscol causes a short-lived fall of blood-pressure and an increase in the blood-flow to a dog's leg. The action has not yet been studied in full detail and it is not known whether the vasodilatation is confined to skin and mucous membranes or whether all tissues are equally affected. Histamine causes similar effects by dilating capillaries, but priscol dilates small arteries and this effect, unlike the corresponding effect of histamine, is particularly well shown in experiments on rabbits. It also causes the erection of hair, and comparatively large doses stimulate isolated plain muscle and isolated heart and constrict the coronary vessels. Priscol is most effective when given by intravenous injection, but it is also active when injected by other routes or when given by the mouth. Strong solutions, locally applied, dilate the vessels of a rabbit's cornea for several hours and

1. Hartmann, M. and Isler, H. *Arch. exp. Path. Pharmak.* 1939, **192**, 141.
2. *Schweiz. med. Wschr.* 1939, **29**, 1271.

this effect has been repeated daily for several weeks without apparent harm. The lethal dose for rabbits is similar to that of caffeine, and the symptoms of poisoning are erection of the hair, slowing of the respiration, general weakness and defæcation. It will be interesting to see what uses, if any, will be found in therapeutics for this new vasodilator drug.

ORTHOPTISTS

THE term orthoptics is now applied to the treatment of concomitant strabismus by remedial exercises with the object of establishing stereoscopic vision and reducing the angle of squint. A number of instruments are used for this purpose but all are based on Worth's amblyoscope. One of the most important modern improvements on this instrument is the arrangement which allows the trainer to keep the patient's eyes under observation throughout treatment. Mechanical devices which permit the independent action of each arm of the instrument and which vary the intensity of the lighting of the pictures seen with either eye are of considerable service. It is generally agreed that the best age for the treatment of squint by orthoptic training is between four and seven years. After this although in a few instances results are satisfactory in most improvement is meagre. An orthoptic trainer requires patience, ingenuity and resource in order to keep the interest of child patients and to make them persevere with irksome exercises. Most of this work in hospitals and in private practice is done by women who have taken a one-year course in elementary optics, the anatomy and physiology of the extra-ocular muscles, refractive errors and squint. The practical work consists of methods of investigation, therapeutics and lectures in hospital procedure and medical etiquette. It is good that this last subject has been introduced for in private practice orthoptists have been apt to retain patients as long as two years under treatment without referring them to an ophthalmic surgeon. Also in the past patients have been encouraged to return direct to the orthoptist without attending their ophthalmic surgeon first. Orthoptists are now on the national register of medical auxiliary services. There are 59 names on the register, of which 10 are in London, 2 in Wales, 4 in Scotland, 1 in Northern Ireland and 1 in Canada. There is no doubt that orthoptic training is of value in some cases of squint, particularly when the angle of the squint is relatively small (10°–15°), in young children, and before and after operation. There are, however, other cases in which it is a waste of time and effort. It is difficult to foresee how many orthoptists should be trained until some statistics have been prepared and assessed. Certainly one should be attached to every eye hospital and to every large general hospital with an eye department. The prospects in private practice are probably fairly good in large towns, for a persistent squint is a lifelong disfigurement.

HEALTH WORK OF THE LEAGUE

Prof. Jacques Parisot, president of the health committee of the League of Nations, in reporting the work of the 31st session of that committee to the council of the League, says that "in spite of the war the health organisation is still very much alive, that governments are relying on it, and that faithful to its mission it will continue to be inspired by that spirit of industry and devotion to the public cause in which its strength lies, and will give still further proof of its utility." Failing full meetings during the war an emergency subcommittee of five members, with power to act, will be appointed. The epidemiological intelligence service and the Singapore Bureau will carry on as usual. The continuance of national committees dealing with nutrition, housing and physical fitness is urged. A commission on pharmacopœias is contemplated for 1940, but questions dealing with museums of hygiene, international lists of diseases and training of visiting nurses are relegated to the background. The health committee is in need of some increase of staff and looks to the committee on economic questions, which is considering the organisation of the technical work of the League, to deal with the matter. Attention is called in the committee's report to the valuable work of the Singapore Bureau, which is in frequent communication with 180 ports concerning the occurrence of epidemic diseases. Credit is taken for the work undertaken by the League in China in organising a new health service, with a quarantine system, improved hospitals and modern medical education. It is claimed that "here, for the first time in history, is an example of unselfish international collaboration for the economic and social reconstruction of a country which was backward from the point of view of modern technology." The report concludes with the reminder that "epidemic disease has taken advantage of every mechanical advance in transportation and of every war or great disaster to spread more widely and to strike a more deadly blow. . . . Man's best chance for better health, longer life and greater freedom from disease lies in the kind of international coöperation that is being carried on by the League's health organisation. This is the newest and most effective weapon in the war against the ancient diseases."

THE EIGHTEENTH CENTURY

IN the preface to his remarkable book, "History of Science, Technology and Philosophy in the Eighteenth Century,"[1] Professor Wolf writes: "At a time when large sections of the civilised world are reverting to barbarism, it is especially stimulating to study the age in which Europe was struggling, and successfully struggling, towards a state of enlightenment." The word "struggling" needs emphasis, since the closing years of the century saw the execution of one of its greatest men of science under circumstances resembling those in Central Europe today. One is tempted, even though it is against the modern view, to dissociate men of science from the politics of their age. In the eighteenth century, as in the present one, they were struggling towards enlightenment against the problems of Nature and the difficulties of thought, while large sections of the population came under the sway of the unmerciful. Nevertheless, whatever may have been the ultimate degree of enlightenment in that century, none can deny the charm of the age of cultured courts, encyclopædias, adventurers and quacks. The history of the sciences, as given in Professor Wolf's book, is instinct with this fascination. In medicine, the eighteenth century saw the development of clinical training by Boerhaave, Van Swieten, de Haen and others, with their realisation of the value of the study of physiology, biology, chemistry and physics. At the same time the Hunters and Matthew Baillie, among others, insisted on the essential importance of a knowledge of anatomy. At the close of the century there appeared the first English treatise on morbid anatomy. Professor Wolf cites as the outstanding advances: percussion of the chest, vaccination for smallpox, cold sea-water douche baths for typhoid, and a revolt against blood-letting and excessive use of drugs. Most interesting are the missed opportunities which he mentions. Hales's work on the variations of blood-pressure in health and disease was not applied to diagnosis, and De Borden's theory

1. By Abraham Wolf, M.A., D.Lit. professor of logic and scientific method in the University of London. London: George Allen and Unwin Ltd. 1938. Pp. 814. 25s.

of internal secretions, Plenciz's view that each type of infectious disease is caused by a specific micro-organism, and Frank's campaign for state public health departments made little impression.

ALBUMINURIA OF EFFORT

THE mechanism of the production of so-called benign albuminuria, as opposed to the type associated with renal disease, has given rise to much speculation. Various types of benign albuminuria have been described as following severe exercise, mental strain, exposure to cold, or a large intake of protein, or as preceding menstruation. Another type known as essential (cyclic, postural, or orthostatic) albuminuria has also received attention. Hellebrandt [1] and his co-workers hold that the albuminuria of effort is connected with the fall in pulse-pressure which is always found after severe exercise. The postulate that exercise is followed by a peripheral vasodilatation and consequent reduction in the renal circulation. This produces renal anoxæmia with increased permeability of the capillary membranes of the kidneys. On the other hand Wamisch [2] and Meyler [3] believe it is the acidity of the urine after exercise which causes the albuminuria. Govaerts and Lanne [4] have now made a careful study of the problem in students from a military training school. Their investigation shows that the amount of albumin appearing in the urine after muscular effort is in proportion to the intensity of the work done. Albumin and tubular casts appear for only a very short time after effort and during this period there is a fall in pulse-pressure. If enough alkalis are taken beforehand to keep the urine alkaline after the exercise, the albumin and casts are reduced and sometimes do not appear at all.

SEQUELÆ OF BRAIN INJURIES

IN the last two decades there has been a change of attitude towards head injuries. What was formerly regarded as a purely surgical preserve is now being opened up to the physician and the psychiatrist. No longer is the fracture of the skull the main interest—the damage to the underlying brain tissue is both immediately and ultimately more important. This change was clearly brought out by Surgeon Captain Danson [5] in his presidential address to the United Services section of the Royal Society of Medicine. He summarised the present state of our knowledge of concussion, contusion and the posteoncussional syndrome, but he also discussed what are ultimately more important and certainly less clearly understood, the sequelæ of cerebral injury. The question of attributability will in the near future bulk large in the minds of doctors who sit on service medical boards, and it will be their task to see that the state is not called upon to pay pensions for hysterical prolongations of genuine cerebral contusions. Apart altogether from the large sums of money which may be frittered away on pensioning hysterics, there is a strong case for making hysteria non-pensionable, both therapeutically and prophylactically. Should it become common knowledge among the troops that prolonged headaches, for example, after head injury lead both to invaliding and a pension, one may look forward to a serious increase in hysterical hypochondriasis after trivial injury. Equally, however, the non-psychogenic sequelæ of head injuries deserve at least the same consideration as the sequelæ of injuries to the limbs, eyes or other important organs. Captain Danson's paper helps to show where the line should be drawn.

1. Hellebrandt, F. A. *Amer. J. Physiol.* 1932, **101**, 357.
2. Inaugural dissertation. Marburg. 1925.
3. Meyler, L. *Ned. Tijdschr., Geneesk.* 1933, **77**, 759.
4. Govaerts, A. and de Lanne, R. *Brux. méd.* 1940, **21**, 361.
5. Danson, J. G. *Proc. R. Soc. Med.* 1939, **33**, 51.

Trotter placed the major sequelæ of head injuries in this order of importance: residual infections, epilepsy, cerebral neoplasms, and unresolved contusions. Captain Danson feels that the order must be radically revised. First he places persistent cerebral contusion proper. This has been termed by Mapother "traumatic psychasthenia," a not altogether happy name. It is actually a traumatic organic confusion which merges gradually into traumatic organic dementia. Its most significant sign is a retention defect of memory, which any competent psychiatrist can demonstrate to a medical board in a few moments. Unless this is tested for, genuine cases where the man is organically incapable of work may be dismissed as hysterical. Next in importance Danson puts so-called neurotic reactions superimposed on cerebral injuries. In as much as these are almost all gainfully motivated, they must be regarded as hysterical. They may take the form of a mass of hypochondriacal symptoms, a bizarre headache, or a suspiciously prolonged retrograde amnesia. Danson wisely says that these are the result of pre-existing hysterical tendencies. In making decisions as to the attributability of such cases, a full and careful psychiatric history is of the greatest value. Other psychiatric manifestations which may follow head injury are affective upsets (usually depressive), schizophrenic episodes, and possibly the revelation of latent syphilitic organic states and alcoholic tendencies. Here the question of attributability passes from a scientific and social to a moral and philosophical plane. The trauma undoubtedly fires off a pre-existing constitutional potentiality. Had the trauma not occurred the mental illness would have remained latent, perhaps for a time, perhaps for ever. Further, one's feelings of pity are aroused acutely by schizophrenia brought on by a blow on the head. One suspects that the case is good enough to satisfy the average medical board, or even the average high-court judge, and the contused schizophrenic will probably get his pension. Yet, apart from the feeling of pity, the situation is precisely the same for the post-traumatic hysteric; he too might never have exemplified grossly his hysterical personality had not the temptation been placed in his way. It benefits neither the hysteric nor the community that his illness should be regarded as pensionable. Philosophically he is the victim of an injustice. Pragmatically he is not. And fortunately, most doctors are more pragmatic than philosophical.

CRAWFORD AND BALCARRES

Lord Crawford, who died on March 8, will be missed in many relations of life for his unassumed and unassuming competence whether as fellow of the Royal Society, trustee of the British Museum, Minister of Agriculture or chancellor of Manchester University—or indeed as a corporal in the R.A.M.C. in the last war. Our own relationship was of a more personal character when he accepted the chairmanship of THE LANCET Commission on Nursing. While the commission was sitting Lord Crawford gave up much time to the work and was an unfailingly good-tempered chairman. His ready sympathy allowed him to see both sides when confronted with the occasionally conflicting interests of nurses and matrons or other hospital authorities; but his judgments were always human and practical. He was a most accomplished speaker; when the report appeared his lucid presentment of its chief findings won it the favour of several audiences. The other members of the commission found him a friendly, easy colleague: nothing ruffled him, not even an Australian paper which described the commission as being under the chairmanship of "the Earl of Crawford and an associate"—the associate, presumably, being Balcarres.

CONTROL OF THE COMMON FEVERS

SCARLET FEVER

Reviewed by Dr. JOHN E. GORDON, *professor of preventive medicine and epidemiology, Harvard University, Boston, Mass*

A CASUAL familiarity with world morbidity-rates is sufficient to indicate that not much progress has been made in the prevention of scarlet fever. The long-continued trend in decreased clinical severity and the fewer deaths now in comparison with other years show that the disease is under more satisfactory control, although continuing to be just about as prevalent as it ever was. The changing outlook on scarlet fever during the past several years has led to much better appreciation of the relationships between this disease and other streptococcal infections. From a better understanding of what is to be controlled comes the possibility of more adequate measures to that end. The studies of Dick and Dick (1924a) and of Dochez and Sherman (1924) and the many that followed shortly thereafter led to almost universal agreement that the infective agent responsible for scarlet fever belonged to the group of hæmolytic streptococci. The principal epidemiological advances have come from the application to field investigations of newly developed laboratory methods for the study of hæmolytic streptococci. Okell (1932) has defined a unitarian concept of streptococcal disease that interprets scarlet fever as but one of the multiple manifestations of infection by hæmolytic streptococcus in man, distinguished from the others by the addition of toxic manifestations to the ordinary reactions of tissue invasion that characterise all streptococcal disease. What was long considered a specific infectious disease, like cholera and plague, now appears to be a morbid syndrome caused by any one of a number of serologically different streptococci (Griffith and Gunn 1933). Two variable characteristics determine whether scarlet fever or simple streptococcal infection develops: the capacity of the infective agent to produce erythrogenic toxin, and the presence or absence in the host of specific resistance to that toxin. The epidemiological considerations associated with this concept have recently been discussed by Bradley (1938) and by Gordon (1939).

Thus interpreted, scarlet fever becomes a problem of streptococci and not of rashes. There need be no question that, besides patients with angina and rash, those who develop only angina from contact or association with them must be considered to have scarlet-fever infection—a term used here to denote epidemiologically similar although perhaps clinically divergent infections exposure to which may lead to classical scarlet fever. Strains of hæmolytic streptococci isolated from such coincidental infections have repeatedly been proved to be toxicogenic and of the same serological type. That some sporadic cases of tonsillitis and acute angina are of similar origin has likewise been demonstrated. However, many and perhaps most cases of tonsillitis are not due to toxin-producing strains commonly associated with scarlet fever. The attention they warrant in a programme for control of scarlet fever remains to be determined by quantitative studies in the field.

PRINCIPLES OF PREVENTION AND CONTROL

Prevention and control of communicable disease may be considered as having two objectives: decreased morbidity and decreased mortality—i.e., besides limiting the incidence, a lessening of death and disability for those accidentally or even avoidably affected. In the broad sense, prevention includes all measures which decrease damage to the human host as the result of disease, whether that damage be physical, economic, social, or psychological, and with no indication of where preventive medicine leaves off and good clinical medicine begins. Accordingly, attention is given in this discussion to some of the administrative procedures intended to limit the spread of hæmolytic streptococci. The methods for specific immunisation are a common interest of the medical officer of health and of the practising physician. Consideration is next given to measures for the protection of persons directly exposed to infection, the immediate and familial contacts of the patient with scarlet fever. The usefulness of the several methods of serum therapy will be briefly interpreted, principally as regards their effect in limiting deaths and disability from scarlet fever. The effectiveness of many programmes for the control of scarlet fever could be increased by application of knowledge already available, but the need at the moment is for certain essential epidemiological information that seemingly can be obtained through field studies that are not too complicated. Some objectives are suggested.

MEASURES FOR LIMITING THE SPREAD OF HÆMOLYTIC STREPTOCOCCI

Administrative responsibility for the general measures designed to limit the spread of hæmolytic streptococci is a function of the official health agency, but the degree of accomplishment is largely determined by the sympathy and support received from private practitioners. This in turn is influenced by the extent to which the medical officer of health appreciates the practical problems and difficulties of medical practice. A recent survey of American administrative practice in scarlet fever (Darling and Gordon 1932) indicates too great variation in the interpretation of what is essential. By eliminating unnecessary restrictions and by avoiding regulations so strict that they are beyond practical accomplishment, improvement could be expected in the important matter of notification of recognised cases.

Registration of reported cases.—No health department, state or local, can effectively prevent or control disease without knowledge of when and under what conditions cases are occurring. The information that most health departments have about scarlet fever is none too satisfactory. A field survey in one of America's better health departments showed that not more than 70 per cent. of recognisable cases of scarlet fever were notified. The average for the nation is probably considerably less. There seem to be several reasons for these inadequacies. The frequent epidemiological relation between infections with sore-throat and rash and others with sore-throat only becomes increasingly appreciated by physicians. If a rash is present, the patient is subject to rigorous restrictions; in its absence he is wholly unaffected by official regulations. If the eruption is fleeting or atypical and other clinical manifestations differ but little from those of ordinary angina, it is understandable that the physician has difficulty in fitting into his sense of fair play notification of one and not of the other. Further, uniform restrictions are applied to all reported cases. Individual differences in ability to transmit infection are well known to physicians and have been amply confirmed by epidemiologists through field and statistical surveys. More equitable and individualised regulations would also lead to an expectation of better notification. In too many jurisdictions and in too

many countries the routine report of borderline cases brings on the restrictions prescribed for undoubted scarlet fever. Much better reporting has been brought about when provision is made for an administrative distinction between suspected and proved cases. Doubtful infections are reported as such; the restrictions are temporary and remain so until satisfactory decision is made as to whether or not the patient has scarlet fever.

Recognition of scarlet fever.—The short incubation period and the prolonged communicability of scarlet fever make prompt recognition of the disease an essential part of a programme for control. The clinical symptoms are usually characteristic. The difficulty comes with mild cases and the infections with fleeting eruptions or even no rash. The need for health departments to provide consultation for clinical diagnosis is amply attested by the extensive use which the profession makes of such services in general, more than for any other communicable disease. The public-health laboratory can sometimes give help. The simple demonstration of β-hæmolytic streptococci in cultures from the nose and throat suggests that the case may be scarlet fever; their absence, that it probably is not. Recognition of serological types as belonging to the group commonly responsible for scarlet fever of a given area and the measurement of toxicogenic properties are procedures not generally provided, because the time required for these tests discounts their value in furthering early diagnosis.

Investigation of reported cases.—In many countries a public-health nurse investigates all cases of scarlet fever within twenty-four hours of notification. The personal sort of instruction brought by her comes where and when it is most needed. Further, it relates to the immediate problems and conditions at hand. Much is to be said for the educational attitude of the nurse, contrasted with the idea of police power so commonly, if incorrectly, associated with the sanitary inspector. Where home isolation is as generally practised as it is in Canada and the United States its effectiveness to a considerable extent depends on the instructions given by the nurse and on demonstration of the methods involved in concurrent disinfection, disposal of food, and care of dishes, garments, linen, thermometers, and instruments. If the patient is removed to a hospital, the nurse supervises the terminal cleaning, airing, and sunning of rooms, which has in many places displaced time-honoured chemical disinfection. She advises on the measures for protection of members of the family.

Distribution of biological products for prevention and treatment.—The provision of hæmolytic streptococcus antitoxin for persons unable to pay is a policy of many departments of health. In America the health departments of larger cities have established convalescent-serum centres for the preparation of serum from patients recently recovered from scarlet fever. This is distributed on a cost basis to those able to pay and furnished free to those who are not.

Public-health education.—The modern programme for control of communicable disease makes great use of educational methods for instruction of the public in the cause, nature, method of spread, treatment, and control of these diseases. This includes also the benefits to be derived from school health inspection and the protection afforded by pasteurisation of milk-supplies.

Isolation.—In view of the various ambiguous and inaccurate uses to which the words "isolation" and "quarantine" are not uncommonly put, an arbitrary but useful distinction is made in the manual on Control of Communicable Diseases (1935) of the American Public Health Association and the United States Public Health Service. Isolation applies to the limitation of movements of the known sick or "carrier," man or animal, and quarantine applies to the restriction of healthy persons exposed to infection. This definition of terms is followed here. The length of the isolation period for scarlet fever is determined more or less arbitrarily on the basis of accumulated experience. Formal regulations apply to the disease rather than to the person concerned, with little consideration of individual differences in severity of infection or probable degree of communicability. This is in contrast with the efficient and individualised regulations for patients with typhoid fever and diphtheria. To some extent it is unavoidable, because of lack of suitable laboratory methods for determining persistence of the infective agent, but other factors are the failure to take full advantage of known epidemiological information, the inertia of accepted practice, and the convenience of public-health authorities. Experience indicates that the prescribed time is often longer than warranted.

Since the duration of isolation rests essentially on opinion and experience, the wide variation in practice followed by different countries and even by adjoining jurisdictions of the same country is not unexpected. Almost nowhere does isolation for scarlet fever now exceed six weeks. A period of four weeks is usual. Progressively shorter periods have characterised American practice of the past ten years, with the result that three weeks is now common there. In some few communities no more than two weeks is required for adult patients. In rare instances isolation for scarlet fever has been essentially abolished, cases of scarlet fever being administered like other streptococcal infections. The experience in Bergen and Trondheim (Holst 1933) has been accumulated since 1907 and confirms the conclusions of Parsons (1927), Lichtenstein (1931), and a good many others, that thoroughgoing programmes of hospital isolation have had no effect on the incidence of scarlet fever.

Almost every physician recognises individual differences in communicability among patients convalescing from simple scarlet fever. So pronounced are the variations in the presence of complications that most public-health regulations prescribe an extension beyond requirements for simple cases, with a maximum of two to three months. Group studies have shown that children under 5 are responsible for about eleven times as many secondary cases as are patients aged 15 or older. Likewise, the degree of communicability shown by patients of all ages is less in summer than in winter. In certain American cities this latter information has been used in individualising isolation. Contemporary isolation regulations often date from a time when scarlet fever was much more severe than it is now, when the epidemiological relations to other streptococcal disease were not understood and the period of communicability very likely averaged much longer, because of a greater incidence of complications. Both clinical and epidemiological evidence indicates that isolation requirements can be favourably modified to conform with the prevailing behaviour of the disease (Gordon and Badger 1934). The most illogical situation is the practically complete disregard of infections unaccompanied by eruption. More prompt and complete reporting and a better regard for prescribed regulations might well follow shorter periods of isolation that gave equal attention to epidemiologically related infections with and without rash.

Indicative of the general trend of opinion in America are the regulations prescribed by the Detroit Department of Health, under date of April 1, 1939

(Vaughan 1939). Isolation of children aged 14 or under, with uncomplicated infections, is for twenty-one days. Children aged 15 or older are isolated for fourteen days if the case is uncomplicated. However, during the winter months and when scarlet fever is unusually prevalent, limited restriction for an additional week may be imposed on the younger patients, but contacts of school age may still resume school duties at the end of the usual period. If at the end of the minimal isolation there is evidence of a complication of scarlet fever, isolation is extended to twenty-eight days. If the complication persists beyond that time, isolation is no longer continued, but the patient remains at home until recovery or for a period of fifty-six days from onset. The residuum of uncontrolled sources of infection makes logical these more liberal regulations, in respect to time and method of isolation, for persons who develop recognisable scarlet fever. The aim is to provide a reasonable measure of safety, and not the apparently unattainable end of complete public protection which has been the objective of contemporary programmes. The results in limiting the spread of the infective agent seem to be as good as any obtained so far. It is appropriate to distinguish between isolation imposed for the protection of the community and the restriction of activities required because of strictly medical reasons. They do not necessarily coincide. A practical feature of shorter periods of isolation is the saving to the individual in time lost from normal activities and to municipalities for expense of hospital isolation. Palmer (1939) says that in New York City about 30 per cent. of patients with scarlet fever are isolated in hospitals at a cost of $5.65 a day. When isolation for scarlet fever was decreased from thirty to twenty-one days, there resulted an estimated annual (1938) saving of $147,973.50. If New York had a programme of hospitalisation comparable with that of London, the annual saving would have been about half a million dollars, or £125,000.

Place of isolation.—The recommended place of isolation varies almost as much as the length of isolation and the disease itself. In some communities almost all patients are isolated in hospital; in other jurisdictions and in other countries most patients are isolated at home. The appraisal form of the American Public Health Association (1938) indicates a satisfactory level of hospital isolation for urban communities to be 25 per cent., and that is common experience in American cities. A comparative study of home and hospital isolation in Detroit showed equally good results, as judged by the number of secondary cases. However, 71 per cent. of patients isolated at home were released at the end of the prescribed minimal period of twenty-one days, compared with 46 per cent. under hospital conditions. The difference was due to the greater proportion of complications among hospital patients, which seems to be explained by the work of Griffith and Gunn (1928) and of Allison and Brown (1937) as a function of reinfection. The improved housing conditions of the present century make it reasonable to believe that home isolation should progressively become more practicable, and that hospital isolation can be reserved for situations where the medical needs of the patient require it, or where home conditions prevent adequate isolation. The expectation would be fewer days of isolation. Home conditions are favourable as regards reinfection. With fewer patients, present hospital accommodation could be so altered as to provide individual isolation or group care of patients infected with the same serological type (Allison and Brown 1937).

(*To be concluded*)

MEDICINE AND THE LAW

Defence of Coincidence of Name

MENTION was made in this column on Feb. 24 of the charges on which John Gibson, otherwise Harry Cecil Rutherford Darling, was committed for trial at Stafford assizes. The charges include manslaughter and other offences. The accused, who denies them all, was said to have posed as a doctor, taking the name of a practitioner in New South Wales, and thus to have obtained a post as locum tenens in a maternity hospital at Stoke-on-Trent. When the case came on lately at the assizes, the defence asked for an adjournment. It was stated that the accused had written to the registrar of the Royal College of Surgeons in Australia and that his case would be prejudiced unless time were allowed for the receipt of a reply. Opposing the proposed adjournment, prosecuting counsel contended that documents thus received from Australia would not be evidence and could not identify the person to whom they related. Counsel stated that the only "H. C. R. Darling" on the British medical register was the Dr. Darling now practising in Australia, who was qualified in 1908. He added that he had in court a copy of the New South Wales Gazette containing the names of registered practitioners; Gibson's name, he said, was not in that list. For the defence it was said that the accused claimed to be named Harry Cecil Rutherford Darling but to be different from the doctor of that name who was qualified in 1908; the accused claimed to have been qualified in 1889. The fact is, said defending counsel, there are two men of the same name—not an impossible or unknown experience.

Mr. Justice Hawke adjourned the case to the next Stafford assizes. The court, by the way, inquired whether an Australian practitioner would have authority to grant a death certificate in this country. The adjournment will allow time for removing any judicial doubts of the powers of a registered medical practitioner, wherever he may be.

The Lancet 100 Years Ago

March 21, 1840, *p.* 962.

From a letter signed C. C. CORSELLIS, M.D., *Lunatic Asylum, Wakefield.*

I cordially respect the motive which has led, in some instances, to the total abolition of restraint amongst the insane: that it is practicable, I well know; that it is humane, I deny. We will, for example, suppose the case of a powerful man, labouring under high maniacal excitement, who will not remain in bed. What, then, is to be done? Two or more men, as powerful as himself, are placed on each side of the bed to keep him there. Now, admitting that these men are possessed of all the patience, kindness, and good sense that the Superintendent seeks for in the selection of servants, but too often seeks in vain; at every attempt made by the patient to rise, they hold him down; enraged at the resistance, he strikes them, spits in their faces, swears, shouts, and becomes more and more violent; the contest is kept up (for I have not yet found the maniac who would be the *first* to yield), until both parties are exhausted. I would then ask, which is the most humane? To pursue such a plan as this, or placing on the patient a pair of ticking sleeves, an article so contrived that it can neither hurt him nor be fastened too tightly, and having a narrow strap of leather communicating with the staple in the bedstead, to prevent him from getting out, and then shutting his room-door, and leaving him for a time free from further opposition?

SPECIAL ARTICLES

THE E.M.S. TODAY AND TOMORROW

By Sir James Walton, M.S., F.R.C.S.

We have been at war for over six months and during this time the Emergency Medical Service has been much discussed. It should now be possible to consider what this enormous movement has accomplished, how it can best be utilised and what function it can serve in the post-war period.

My own experience has been of great value to me and the opinions gained thereby may be of help to others. In the beginning of last year the sector system was introduced and I was asked to take charge of a unit of 600 beds to be formed at Claybury Mental Hospital, and in March I commenced preparations. Some of the criticisms I have heard against the system would infer that my experience was exceptional, but from the very beginning I received the most loyal help and enthusiasm from all concerned. The heads of the various departments of the London County Council made a special visit to consult with me at Claybury. They came round and viewed the suggested site. Everything I asked for was given, a lift and a large double theatre were specially built for the unit and what was of the greatest value was that the special knowledge of the heads of the different departments was freely placed at my disposal. They were able at once to provide me with all the details of the necessary equipment, of the requisite sanitary arrangements and the various administrative details of which I had but a very superficial knowledge. From the very beginning I was struck by the remarkable loyalty of the L.C.C. in doing all they could to help what was in fact a rival organisation, robbing them of a part of one of their carefully organised hospitals of which they were so justly proud.

Of the staff of the hospital the chairman (Mr. Emil Davis), the medical superintendent (Dr. J. S. Harris), the matron (Miss L. Payne) and the steward (Mr. W. L. M. Harris) worked with astonishing enthusiasm and energy to convert dormitories and day-rooms of the inmates into well-equipped wards. During our stay there on a whole-time basis we were comfortably housed and fed and made to feel like honoured guests rather than interlopers. These good relationships have continued, and the success of what I feel is a very successful unit would not have been possible without the constant willing and able help of the superintendent and the matron.

A WORKING UNIT

Patients are brought up by car or ambulance to a large courtyard capable of allowing a constant stream of vehicles; they are taken to an entrance where a team of porters carry the stretchers into a wide corridor converted into a reception-room, where they are placed on six trolleys. The porters pick up new stretchers and blankets in place of the ones with the patients and within five minutes the ambulance can drive off for a fresh contingent. Although unlikely to be required, decontamination rooms are present in case of local gas attacks. Each patient is seen by a team in the reception-room and then sent to the wards where another team is on duty. These arrangements had all been made in advance and although somewhat short of equipment we could have admitted 450–500 wounded on the evening of the day that war was declared.

Very careful consideration was given to the method of allocating the work and it was decided to abandon the method generally used of segregating the surgical from the medical cases: five teams were formed, each consisting of a physician, a surgeon, a medical officer and one or two students. Medical and surgical cases were taken into the same wards and two teams were on duty at the same time, one in the reception-room and one in the wards and theatres. The cases admitted during the hours of duty remained under the care of this latter team and were distinguished by a specially coloured card. In case of emergency there were therefore three teams in reserve. By this means there was no shortage of beds owing to a rush of surgical cases while medical beds were empty. There was always a close collaboration of surgeon and physician and as time went on subcommittees were formed by the physicians to evolve a uniform method of treating shock and collapse, of giving artificial respiration, oxygen therapy, blood transfusions and stimulants. For the students the method was also of value in that cases in one ward were not already labelled surgical or medical.

The general principles were laid down that each team must adapt itself to conditions as they arose and although the surgeons included specialists in thoracic surgery, in neuro-surgery and in aural surgery, and there were also specialists among the physicians, all were prepared to undertake any work and more especially to utilise such equipment as was at their disposal. No-one was encouraged to claim that work could not be done because certain instruments or material was absent. If there was no special splint for a fractured tibia, they were prepared to use planks, walking-sticks or even a poker. There is, however, now a large and varied equipment partly supplied, partly devised by the medical staff, and in some part actually made by the inmates of the asylum in their work-rooms; but the spirit of adaptation to the conditions present still prevails. The single and large double theatres are well equipped and most efficiently organised and run by the nurses of the L.C.C. staffs of Hackney and Mile End hospitals. Another great benefit of the team system is that in the event of a great emergency elsewhere our hospital could at once, or, now that many of us are on part-time, at very short notice, send a full team of a physician, a surgeon, an R.M.O. and a student, who would be prepared to take their own private instruments with them, to any hospital in the sector. This could be continued until only one team was left at Claybury.

At that time a school was started and three lectures in addition to ward demonstrations were given every day. The staff of the hospital took part and lectures and demonstrations in mental disease were given weekly. With the return of the students to the voluntary hospitals this has had to be abandoned.

While in residence the life was busy, happy and enjoyable, marred only by the knowledge that owing to our commitments we were all rapidly getting into debt. But so was everyone else. One cannot speak too highly of the loyal coöperation, the enthusiasm and the keen spirit of the whole of the medical staff. Since then, alas! it has had perforce to be very largely reduced as members were called elsewhere, and with several of us on the part-time system there are now only three teams; but there is still the structure in

being which could be enlarged to any extent if men become available. The reduction in numbers has been most severely felt on the nursing side, for with the reopening of a large part of the general hospitals many of the nurses have had to be recalled, and there is no doubt whatever that there is a very real shortage of trained nurses, which will become acute if an emergency arises. One cannot help but feel that a greater use might have been made of the civil nursing reserve.

ADAPTATION TO NEW CONDITIONS

It has become evident, therefore, that if properly used the E.M.S. is capable of dealing with an almost unlimited amount of work, but those entering the service must in large part throw over their old ideas. They must be prepared to adapt themselves to the conditions they find, to learn that they cannot be dependent upon instruments and equipment, but must utilise what they have. The greatest surgeon is one who can do the biggest operation with the minimum number of instruments. Self-contained teams must be formed, each prepared to cover the whole of medicine and surgery, to work together while on duty, to be prepared to be always in reserve and to be ready to travel if necessary, taking with them their own instruments and equipment if such is not available at their place of arrival. It is this spirit of adaptation, of enthusiasm, of loyalty and coöperation of the different medical services which has not only made it evident that the present service can deal efficiently with any emergency but which holds out so good a hope for the future development of medicine.

It is manifest that when the war is over there will have to be a closer relationship between the state-owned and the voluntary hospitals, and the working of the E.M.S. has done much to indicate the lines upon which this union might develop. I think that it will be generally admitted that in the early days with whole-time service the great fault of the scheme was that no provision whatever was made for the middle- and better-class patient. It was not equal facilities for all but provision for the poor and deprivation for the better-off—which is not beneficent socialism but frank bolshevism. In the permanent state hospitals the great drawback to the medical man is that as he advances in his profession he ceases to be a doctor and becomes a pure administrator.

With the development of any new order a great effort must be made to retain those portions of the voluntary system which have done so much to keep up the standard of British medicine and surgery. That this standard is regarded as high is, I think, shown by the fact that so large a number of colonial and foreign visitors come to this country to see our hospitals and study our methods. The present method of clinical teaching, with its close relationship and humane understanding between patient and student, is, I believe, not excelled anywhere. In the voluntary system the physicians and surgeons have the great benefit of meeting and treating all classes of the community and their private relationships guard them from the danger of coming to regard all patients merely as cases. They are able to keep a broader and more humane outlook on life and the fact that they thereby gain some material reward is a stimulant rather than a deterrent to useful and progressive work. It has ever seemed to me that the grave danger of a whole-time system with a set salary and a pension, with progress dependent almost solely upon seniority, is that many will lose the stimulus of necessary effort and will drift into the easier life with the minimum amount of work. The future will be secure and with security will come slackness and a loss of the high standard of work.

FORMULATION OF A PLAN

It is now that a definite plan should be formulated so that if there be a union between the state and voluntary systems the good that is in each system may be retained and the bad eliminated. If left till the war is over there will be such a diversity of advice and opinion from so many clashing interests that grave errors may arise.

To formulate such a scheme a committee of active practising surgeons and physicians should be formed. It should be sufficiently strong and representative to advise the government authoritatively when the time arrives. It should indeed be a British medical association of all consultants participating in hospital work. My own impression is that most consultants would welcome posts as whole-time professors of medicine or surgery attached either to the present voluntary hospitals or to units such as we have at Claybury, working in conjunction with the voluntary hospital. Concentration of the whole of their work within one building with residence at the site of their work, regular planned work with longer time for research, free access to laboratories, and the possession of a fixed salary would be a great attraction and a compensation for a smaller income. There are, however, three essential provisos:

1. The surgeon or physician in charge would have to remain a doctor with complete control of his unit and would be freed of all administrative work.

2. He would have to be provided with private rooms and consulting-rooms where he could treat better-off patients at moderate fees, so that he could mix with all grades and could obtain some added reward for his labour and reputation.

3. He would be given full facilities for undergraduate and postgraduate teaching.

The close relationship between the mother hospital and its units would, I am certain, be most strongly cemented through the younger men: the free interchange of resident hospital appointments, the passage of the students from one of the hospitals to another, and the close union of the ancillary departments would do far more to unite them than the appointment of seniors on the staff. The very important question of the position of the general practitioners would also have to be settled; the holding by them of clinical assistantships in the different departments, their ability to admit private patients and to act towards them as house-physicians or house-surgeons under the professors, and their power to give up general practice and enter the whole-time service of the hospital if they so desired—these are points that occur to my mind, but on this subject I am not able to judge; evidence would have to be given by those in general practice.

Many might consider that these points, which seem to me so important, are of only secondary consequence and that others are of greater weight, but I would urge that a powerful body be formed without delay to formulate a definite and considered policy so that when the war ends it could be carried into effect at once without muddle and delay. The great help that the present branches of state medicine have given to the E.M.S. makes it certain that they would support and carry into effect any such scheme once they were convinced that it was best for the health of the people and for the preservation of the high standard, the ideals and the progress of medicine.

IN ENGLAND NOW

A running commentary from our Peripatetic Correspondents

THE makers of ultraviolet apparatus must be experiencing a quite unexpected boom. The only practicable way of blacking out large areas of window, especially in the case of roof lighting, has been by obscuring them permanently, either by painting them over or by covering them with some sort of wallboard. Many firms have now realised that their employees are not getting all the sunshine that they should and the result has been a widespread establishment of industrial sunray clinics. It is no good pointing out that the workpeople are no worse off now than they used to be; that little or no ultraviolet light ever percolated through the murky urban atmosphere even before the blackout and that if on a particularly bright summer day it did it never got through the glass of the windows. We are only too glad to see some good come out of the blackout, and if, as seems probable, it leads to a better appreciation by the public of the value of sunlight, it may eventually stimulate the adequate prosecution of smoke abatement and the use of Vita-glass for windows, or as a second best the establishment of clinics for the irradiation of the population generally. It is interesting to speculate how the latter might be done. Would the local authorities include it in their already multifarious activities or would some enterprising manufacturer market a mass-produced lamp at a really low price for use in the home? It does not seem logical that industry should be responsible for providing radiation prophylaxis, though some might argue that it falls in the same category as holidays with pay. One thing is evident and that is the popularity of these clinics. We may suspect that the prospect of achieving a summer tan in the middle of winter ranks equally with the hope of a reduced incidence of colds, influenza and other infections, but the fact remains that except in those firms where extensive arrangements have been made the demand considerably exceeds the accommodation available, and workers are keen to attend even when treatment can only be given outside working hours. A quite unexpected turn has been spontaneous community singing whilst seated round the lamp. The dose of cod-liver oil suggested as a cheaper alternative would not be received with quite the same enthusiasm.

How seriously must we consider the risks of this extensive irradiation? Most of us have seen cases of quiescent pulmonary tuberculosis lighted up by excessive sunbathing, or red-haired girls in a state of blistered misery, and we still see some cases of conjunctivitis from people taking the goggles off during treatment—the attendants being more frequent offenders in this respect than the patients. There are other contra-indications as well—certain skin diseases, for example, and the textbook ones like smallpox and advanced heart diseases. Many of these newly established clinics have been placed in charge of a nurse or a lay welfare worker who has had no electrotherapeutic training whatever and simply carries out the instructions issued with the lamp by the manufacturer which often make no mention of any conditions in which special care is required. One does not wish to curtail this interesting experiment by exaggerating its risks, but these schemes should at least be supervised by a medical man or a trained electrotherapeutist.

* * *

There have always been plenty of teachers and students who can show Nature a thing or two in the way of short cuts. The popular Dr. Spoonfeed is an outstanding example. With the ease and ingenuity of a railway Bradshaw he can give you all that you need to know to bring you to Journey's End and your registrable qualification. He has the very best classifications (his division of the 57 varieties of headache is a masterpiece), he will forget not a single possible cause of splenic enlargement, and he can rattle out easily memorisable data for you with the speed and accuracy of a machine-gun. So full of colour is his artistry that you feel his true setting would be the bright lights, the placards and the mysterious tents of a bank-holiday fair. Walk up, come inside, see the Doctor himself at work! His outfit is simple—a lavish collection of bottles containing all sorts of liquids, a huge delivery spoon, and a round funnel, polished and shining. The young aspirant comes forward, one of the many who are waiting in the antechamber. "I want to become an M.B., sir." The doctor nods, emphasises the need for frequent and regular instillations; the nozzle of the funnel is deftly inserted into the cranium and appropriate samples are transferred by the spoon from the bottles and poured into the cavity. The operation seems quite painless, and is obviously satisfactory to both giver and receiver. Later, however, a curious phenomenon can almost always be observed if it is looked for. Hardly has the young aspirant left the august presence than the precious liquid begins to leak out of the ears; he seldom notices, however, and even if he does he is sure that the next instillation will put the matter right. Dr. Spoonfeed on his part rarely learns of this almost invariable sequel. His subjects do not tell him, for even if they noticed it they would hardly care to confess to such a waste of good material; and on the few occasions on which the leakage has been brought to his attention he has always made it clear that he can take no responsibility for the failure of his instillations in heads that obviously have a crack in them somewhere.

* * *

Cloudless skies, a shade temperature of 90° which the natives describe (in all sincerity) as cold; sand, camels, palms and all the rest of it. Is this in England now? Of course it isn't, but *coelum non animum mutant qui trans mare currunt*; physically in the Sahara desert, mentally and sentimentally still in the heart of London groping through the slush and the blackout.

To leave England is to be brought forcibly to recognise that we really are at war. Permission to travel is accorded with an ill grace and is obstructed by a number of regulations, leaving a culminating uneasiness that if it is as difficult to get back as it is to get out there is a good chance of extra-insular residence for the duration. And the premium on an all-risks life insurance is of a magnitude well calculated to make you take stock of your responsibilities. Nor is the reception at the airport more reassuring. Your ration-book and identity card are impounded, or for all you can tell confiscated. Your passport, notwithstanding all the visas obtained with such pertinacity, is scrutinised with polite but thinly veiled suspicion. Your scanty stock of money, designed as the minimum to keep body and soul together en route, is grudgingly agreed to. Every scrap of printed or written matter must be produced and "declared"; in my case it was limited to the current number of THE LANCET, inspected page by page by an unscien-

tific official seemingly disappointed at his failure to identify anything seditious.

So I am weighed and passed to the 'plane with four fellow-travellers who invite speculation as to why and with whose authority they are making for the Near East. I guess that the debilitated lady with the chronic cough which suggests bronchiectasis and asthma has been caught napping since the summer and has only just succeeded in obtaining permission to return to her Egyptian home. But the very young lady with the tinted finger-nails, plucked eyebrows and a sartorial smartness more appropriate to the Bois de Boulogne than an aeroplane trip, what is she doing in this galère? In due course I discover that she is going out to be married to somebody in the air service and is doubtless wearing part of her trousseau. The other two are rough-looking customers, one decorated with a black eye, the other with a woe-begone expression. I learn later that they are north-country engineers proceeding to a job on the Suez Canal, and their appearance is secondary to celebrations of their last night of occidental liberty; hence the infra-orbital contusion and sad look, for the second one's pocket was picked to the tune of £15 and a presentation gold lighter.

Paris, Marseilles, Tunis, Tripoli, Bengasi, Alexandria. There is a perpetual air of secrecy, refusal to announce the next stopping-place and the direction of route—all doubtless necessary precautions, for c'est la guerre. And at every possible opportunity forms to be completed in duplicate, a recapitulation of one's life history and future expectations, with, in the case of Italy, special reference to one's parents and a murmur of self-congratulation at having been born in wedlock, so avoiding awkward complications.

Yet we advance, sometimes with irritating delays, sometimes with giant strides, 1200 miles or so in a day. One lives in perpetual subacute anxiety. The 'plane takes off at 6 A.M. and your sleep is likely to be disturbed with horrid dreams of missing it and being marooned for months before another will condescend to take you, more especially as there is an awkward stipulation about "priority." The arrival of a haughty gentleman in uniform may mean the cancellation of the seat of a humble civilian, summarily and without appeal.

• • •

I had heard in advance of "air-sickness" from sufferers whose descriptions created the impression that ordinary sea-sickness is by comparison a pleasure. That there is such a malady can hardly be denied, but as hour after hour passes with little sensation beyond that of boredom it is hard to imagine why it arises. True, the last minute or so of the swaying movements as you are coming down are unpleasant, and possibly the intracranial alterations incidental to altitude may be responsible for sickness in those peculiarly sensitive to such changes. Be that as it may, nobody seems to be bothered although the elementary arrangements for dealing with the symptoms are prominently displayed in little packets in front of each seat. Certain speculations are inevitable—that this would be an unfortunate occasion to select for a serious illness, say, a perforated gastric ulcer, an attack of gallstone colic or a coronary thrombosis. Nor would an epileptic or even a frank hysteric be an agreeable travelling companion. And a momentary thought of what complete engine failure would mean when there is for hours nothing in sight but the sea has to be checked by drastic self-discipline.

And so in due course the Near East is reached and we parade the sand with an admiring glance at the copper, golden and purple tints of the sunset and a sense of peace and quiet which makes it difficult to remember that in Europe there is war. Not that Cairo is all peace and quiet; it is, in fact, obtrusively noisy. Shouting and yelling are de rigueur, the motor horns are tuned up to an excessively loud and raucous pitch to advertise the superiority of the drivers and the driven and the inferiority of all on foot. The indigenous pedestrian has learned to display exceptional alacrity in his response to the exhortation or invitation to get out of the way, but it is a nerve-racking experience for the European fresh from traffic orthodoxies with their live-and-let-live principles. Here we are freed from the inconveniences of war. After three months of a troglodyte existence the luxury of light is appreciated. There is no restriction on any foodstuffs, and petrol is unlimited and relatively cheap. But the encampments at the Pyramids remind us that here too they are prepared. From time to time there is an experimental blackout with take-cover warnings, when to avoid the terrifying-looking shelters with dubious companionship it is wise to remain indoors.

• • •

Back again, flying over the snow-covered fields of France. Little more than forty-eight hours ago we slept in the open, contemplating the crescent moon and myriad stars through the interstices of a mosquito-net. Back to England to face a perishing east wind and feet of snow, the discomfort of the blackout, the inconvenience of rations, the enforced inactivity and the apprehension of dangers; yet glad to return to the heart of affairs to be on the spot for whatever may happen in England now.

SERJEANT-SURGEON

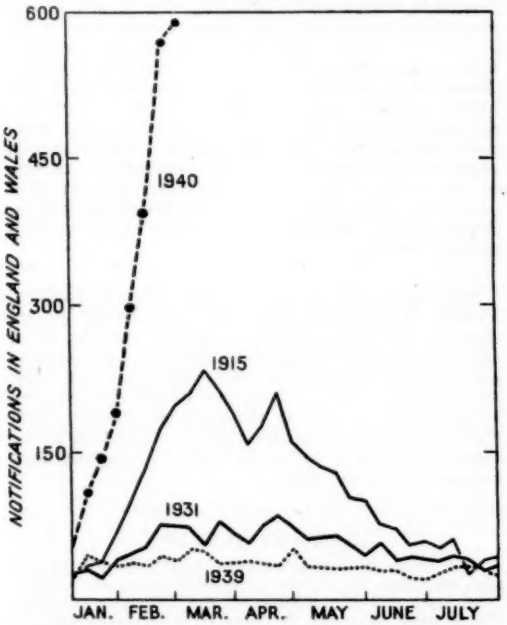
THE office of serjeant-surgeon to the King is an old one, although the actual title does not seem to have been used till the middle of the fifteenth century. There were surgeons in personal attendance on the Kings of England in their campaigns long before that. John Arden, for instance, accompanied Edward the First to Crecy in 1346. Today, the serjeant-surgeon is the senior of the King's surgical officers. "Serjeant Surgeon John Knight," the subject of a careful memoir by E. M. and R. T. C. Calvert (William Heinemann, Medical Books. Pp. 111. 1939. 10*s.* 6*d.*) earned his office by his loyalty and attendance on Charles II during his long exile. As well as a skilled and trusted surgeon, he was probably a shrewd political agent. He was sixty when in 1664 he became sergeant-surgeon, and, as his own letters show, began the most arduous period of his existence. He was three times master of the Barber-Surgeons' Company, he had a large private practice, while as surgeon-general to the forces during the Dutch wars he controlled the medical provision for the sick and wounded in the whole of the eastern district of England. At the age of seventy-nine he visited the Spanish Netherlands "on occasion of the sickness of the King's troops." His letters to Secretary Coventry describing his difficulties in providing adequate attendance on the sick and wounded from the fleet testify to his energy and devotion. His other correspondents included John Evelyn, Samuel Pepys, Sir Thomas Browne, and the Duke of Albemarle.

Knight was for many years the principal medical officer entrusted with the preliminary examination of the patients gathered from all parts of the kingdom to be "touched" for the King's Evil. The authors question whether a man of such robust sense and shrewd professional acumen could really believe in the efficacy of this proceeding. But whatever he may have thought as a doctor, perhaps as a good Royalist he was prepared to play his part in a ceremony which supported the popularity of the crown.

PUBLIC HEALTH

Cerebrospinal Fever

AFTER the rapid and unbroken rise in the weekly notifications of cerebrospinal fever since the beginning of this year, the small change between the totals for the weeks ending Feb. 17 and 24—namely, 557 and 586, will be observed with some relief. The figure of



623 just received for the week ending March 2 does however make it probable that the epidemic tide is turning. The incidence was still relatively very high and continued to be widespread. The slackening in the upward trend was, nevertheless, apparent in each region of the country, the notifications for the weeks ending Feb. 17 and 24 being 185 and 200 in the south-eastern counties, 100 and 118 in the northern, 102 and 104 in the midland, 33 and 24 in the eastern, 66 and 63 in the south-west and 74 and 77 in Wales and Monmouth.

Influenza and Pneumonia

In the week ending Feb. 24 the influenza epidemic showed no signs of abating, though its upward movement was small. Deaths attributed to it in the great towns rose to 629, from 521 and 514 in the two previous weeks. But in the week ending March 2, the figures for which are just available, there was a fall in the number of deaths to 512, while notifications of primary and influenzal pneumonia in the country as a whole numbered 2243, a slight fall on the figure of Feb. 24 (2280). It was the sixth consecutive week in which over 2000 cases were recorded. The increase in influenza deaths was mainly apparent in the northern counties, the large towns of Lancashire being particularly prominent. In other parts of the country the returns differed little from those of the previous weeks.

Infectious Disease in England and Wales

DURING THE WEEK ENDED FEB. 24, 1940

Notifications.—The following cases of infectious disease were notified during the week: Smallpox, 0; scarlet fever, 1174; whooping-cough, 521; diphtheria, 734; enteric fever, 6; measles (excluding rubella), 4793; pneumonia (primary or influenzal), 2280; puerperal pyrexia, 154; cerebrospinal fever, 586; poliomyelitis, 8; polio-encephalitis, 0; encephalitis lethargica, 6; dysentery, 63; ophthalmia neonatorum, 82. No case of cholera, plague or typhus fever was notified during the week.

To the 586 cases of cerebrospinal fever Berkshire contributed 14 (Reading 8), Chester 10, county of Derby 20 (Derby 11), Devon 13 (Plymouth 5), Essex 18 (Colchester 9, Southend 5), Gloucester 25 (Bristol 12), Kent 24 (Canterbury 5), Lancaster 47 (Liverpool 19, Bootle, Swinton and Pendlebury each 5), county of Leicester 17 (Leicester 7), County of London 27 (Hackney and Wandsworth each 3), Middlesex 24 (Heston and Isleworth 8), Somerset 19, county of Southampton 48 (Southampton 12, Bournemouth, Portsmouth, and Aldershot each 5), Stafford 14, Surrey 22, Warwick 13 (Birmingham 9), Wilts 20, Yorks (West Riding) 22 (Sheffield 9), Glamorgan 29 (Cardiff 6), Monmouth 20 (Newport 7).

Deaths.—In 126 great towns, including London, there was no death from smallpox or enteric fever, 8 (0) from measles, 4 (0) from scarlet fever, 6 (0) from whooping-cough, 31 (2) from diphtheria, 31 (4) from diarrhœa and enteritis under 2 years, and 629 (59) from influenza. The figures in parentheses are those for London itself.

Fatal cases of diphtheria were scattered over 20 great towns, Liverpool reporting 4, Manchester and Stockport each 3. There were 6 deaths from diarrhœa in Birmingham. Gloucester had 2 fatal cases of measles and Belfast 15 in the same week.

Deaths from influenza have risen this week to 629 (from 521 last week). Of the 570 outside London 121 were reported from the south-eastern area (Southampton 11, Bournemouth 10, Portsmouth 9); 264 from the northern area (Manchester 22, Sheffield 19, Liverpool 18, Bolton and Rochdale each 13, Bury and Preston each 12, Blackburn and Wigan each 10, and York 9); 110 from the midland area (Birmingham 20, Stoke-on-Trent 18, Nottingham 14, Bristol 12 and Leicester 11); 41 from the eastern area (Cambridge 12, Norwich 11, and Ipswich 10); 17 from the south-western area. In the Scottish returns for the same week Glasgow reported 27 and Edinburgh 32.

Addendum.—In the return for March 2, which reaches us as we go to press, the notifications of cerebrospinal fever have risen from 586 to 623. There were 2243 cases of pneumonia. Deaths attributed to influenza have fallen from 629 to 512 of which 41 occurred in London.

Weil's Disease in Industry

The announcement that Weil's disease is to be added to the schedule of industrial diseases is timely. The prevalence of this disease in certain occupations, notably coalmining, fish-cleaning and sewer work, renders its inclusion in the schedule highly desirable. The first award of an English court in connexion with a claim for compensation for Weil's disease was made at Newcastle-upon-Tyne in 1936 following an outbreak of the disease in one of the local collieries, although the Scottish courts had allowed claims some years previously after the outbreak in the Midlothian coalfield. At that time efforts were made by the defence to show that the miners were likely to encounter the organism outside the colliery. The learned judge, quoting a well-known ruling of the late Lord Birkenhead, remarked that he was not impressed with the contention that he might come into contact with the urine of infected rats in his own home, in a railway carriage or even in a public-house. The life of a miner is hazardous enough as it is and any simplification of the procedure for obtaining compensation for a very dangerous disease is welcome.

Points from Annual Reports

Dr. James Ferguson reports profound changes in the population of *Surrey* during the inter-war era. Before the last war the county was the week-end garden of London; after the war much of it became industrialised, but its amenities were in large part preserved. In 1921 the population of the administrative county was 738,618, in 1938 it had risen to 1,183,900. The rise had been steady, mainly by immigration, but it

had been decelerating since 1935 and in 1938 the increase in population was but 22,900, only about two-thirds of the average of the decade. In the days of rapid development the excess of births over deaths accounted for only a tenth of the increase, but in 1938 it accounted for a quarter of it. Since 1901 the population of the county has risen 127·78 per cent., but whereas the mid-eastern districts rose 362·92 per cent., the south-eastern rose 45·46 per cent. Of the 28 urban and 5 rural districts within the county, Wimbledon is the only one in which the population has actually fallen since 1921, but many of the boroughs—the typical Surrey county towns—have increased but slightly. On the other hand Carshalton increased from 14 to 59 thousand, Sutton and Cheam from 30 to 76, Malden and Coombe from 14 to 39 and Merton and Morden from 18 to 69. The crude death-rates in 1938 ranged from 7·02 in Banstead to 12·82 in Farnham. The corrected, or comparable (not the standardised) death-rates show wide variation from 6·07 in Epsom and Ewell to 10·78 in Wimbledon. This suggests that the comparability factors require recasting, for it is unlikely that one part of the county should have nearly twice the true death-rate of another. But the infantile mortality-rates, which are self-standardised, varied from 9·38 in Leatherhead to 68·78 in Barnes. The average infantile mortality for the whole county was 37·87, the lowest ever recorded. Yet it is curious that diarrhœa and enteritis, which in the last century was the chief element in infantile mortality, was in 1938 nearly double what it was in 1937.

In Dr. E. K. Macdonald's report to the city of *Leicester* education committee, Dr. C. A. McPherson, one of the assistant school medical officers, contributes a somewhat long chapter on "The A.C.H. Index and other Assessments of the Nutrition State." A.C.H. is a method of selecting children for attention to their nutrition favoured by the American Child Health Association. The letters stand for arm, chest, hip and connote a formula derived from the circumference of the biceps, the depth of the chest, and the distance between the hips. It is based on the physiological proposition that as the skeleton is determined mainly by heredity and its covering mainly by nutrition the relationship of the covering to the bony framework should give a measure of nutrition. Dr. McPherson says that his investigations show that the claims made for the A.C.H. index are not justified. From his work it seems clear that the index as it stands is of no value in assessing nutrition, but the measurement of the biceps seems nevertheless to be worth considering in assessment. He finishes his article with the opinion that a satisfactory index of nutrition might come from the biochemists; he has apparently little belief in the discovery of a satisfactory index based on physical measurements. In trying to assess nutrition, are we not attempting to find a common factor —itself undefined and indefinable—to express an almost infinite number of variables?

The lengthy report of Dr. Frederick Hall, county medical officer of *Lancashire,* is likely to be the last of its series and will remain as a monument of the health services of this important county of 1,880,600 inhabitants as they stood at the end of the inter-war period. The map of the administrative county has a sieve-like appearance due to the numerous county boroughs which are cut out of it, so to obtain a full grasp of the geographical county it is necessary to study the reports of all the local government units which make it up. But there is much to be learned from the county report, especially of those parts which deal with the rural areas, for these give a truer picture of the native Lancastrian and his special health attributes than the reports from the great towns. In the statistics for the past fifty years the birth-rate, death-rate and infantile mortality-rate in the rural districts were persistently below those of the urban districts, except that since the nadir of the birth-rate in 1933 the rural birth-rate has caught up and since 1935 outstripped the urban rate. The rural death-rate (crude) fell from 16·91 to 11·08 and the urban rate from 19·18 to 12·48. In the urban districts the highest infantile mortality was 183 in 1893 and the lowest 55 in 1938; in the rural districts it was 139 in 1891 and 51 in 1937. Taking the population to be, in round figures, a quarter of a million rural and one and a half million urban—or one to six—one can work out the comparative mortalities from the principal diseases and find they are higher in all cases in the urban population, but for senility and neonatal causes the rates are much the same. The difference is greatest in diphtheria and tuberculosis, which today are prominently urban diseases. The comparability factor for the urban districts averages 1·07 and that for the rural districts 0·99, so on adjustment the differences between the urban and rural mortalities are enhanced. In Lancashire, as in most parts of Britain, and indeed of the world, 1938 was an exceptionally healthy year with an uneventful health history.

Panel and Contract Practice

Revival of the R.M.O. Service

FOR some weeks there have been rumours that the R.M.O. service, which was suspended at the outbreak of the war, would be revived in the near future, though probably not in its entirety. At a meeting of the Joint Committee of Approved Societies on Feb. 9 it was pointed out that in the existing circumstances the need for the service was, from the point of view of the societies, greater than ever. One society official made the point that, notwithstanding the withdrawal of men for military service, and the increasing employment of men and women for armament work, the number of claims for sickness benefit continued to rise at an alarming rate. It was mentioned that arrangements for a private referee service were irregular unless covered by a rule of the society. As we announced in our issue of March 9 (p. 466), an R.M.O. service was resumed on a restricted scale from March 11. The resumed service will in the main be confined to dealing with references from approved societies and practitioners on the question of capacity for work. All references from practitioners should be sent to the divisional medical officer of the division in which the insured person is living. The addresses of the four divisional officers were set out in our previous note.

Reinstatements

The *Panel Gazette* says that the Insurance Acts Committee have asked the Ministry of Health to arrange that when normal conditions return all insured persons serving in H.M. Forces or evacuated from their homes will automatically be restored to the lists of the doctors formerly responsible for their medical treatment unless they have permanently removed from the area. A similar arrangement was in force in London during the last war. It has been agreed to deal in like manner with men and women discharged from the Forces now, a certain number of discharges having already taken place.

LETTERS TO THE EDITOR

USE OF MAN POWER IN MEDICINE

SIR,—Perhaps you will allow me to repeat in your columns a warning which should be written across all war work. The violence of the hour is unfriendly to quiet thought and exact statement is out of season. In the rush to meet the immediate wants, perhaps I ought to say the needs, of the R.A.M.C. we may easily lose sight of what is of even more moment to the country. There are not enough doctors to go round; the dearth of surgeons can only be met firstly by a well-conceived plan for using mobile surgical teams, and secondly, by dilution.

By dilution I mean training surgical registrars and even men with less experience to act as surgeons. That is only possible if they are left to us to train. If medical practitioners under the age of 28 eventually become liable for compulsory medical service with the Armed Forces, if age is the only guiding factor, then a registrar who has already the fellowship or membership of one of the Royal Colleges and who has spent four or five years in resident appointments may be hurried off to a battalion; the R.A.M.C. at the present time recognise only two classes entering the service, the specialist who is a major and the rest who are lieutenants. If this should happen it can only aggravate the scarcity of surgeons. I am, however, less concerned with this than with the ultimate effect on the fabric of the profession. It means that for the duration of the war—perhaps a matter of years—the training of those who will lead the profession in the years to come will be suspended, and the supply of men with special experience will be arrested. I shall be told that if conscription comes the Central Medical War Committee or some other body will be asked to adjudicate between the claims of the civil sick and the services. I can only answer that in my experience the insistent demands of the services for an expeditionary force, with their statistical precision, are not easily countered by a statement, necessarily vague, of the needs of the civil population.

I write in the hope that the medical profession may be adequately represented on any committee which is entrusted with decisions in a matter of more than passing importance to the future of our calling.

I am, Sir, yours faithfully,

London. C. M. WILSON.

PEPTIC ULCER IN THE SERVICES

SIR,—I understand that problems of considerable importance have arisen, as was inevitable, in connexion with young men in the Services found to be suffering from peptic ulcer, particularly duodenal ulcer. Those of us with much experience of this disease have believed for a long time that the best course to adopt is to discharge such men as quickly as possible, because otherwise a high proportion of them will become a burden to the state, it being wellnigh impossible to keep them fit in the dietetic circumstances inevitable during service, whether in this country or overseas.

During the last twenty years I have had under my care many officers of the navy, army and air force suffering from various effects of peptic ulceration. With few exceptions it has been possible, occasionally with the help of surgical intervention, to keep them at work. None of them has died, and I think not one of them has been invalided out of the Services; but it would be untrue to suggest that their work has not at times, and sometimes seriously, been interrupted. In general they have presented a far greater problem than have officers suffering, for example, from diabetes mellitus. But the preservation of a trained and valuable officer is a very different question from the retention of a recruit who will not only tend to have recurring illnesses, but will later have a justifiable claim to a pension for a disease which has been aggravated by service.

There is, however, a further aspect of the problem which calls for emphatic comment. I have been told that it is claimed that many of these recruits could be rendered fit for service if they were treated by the surgical removal of the duodenum or part of the stomach. To anyone with wide experience of such cases, the suggestion seems so absurd as to be incredible, but I have been informed of it by such high authority that I wish, through your columns, to inquire whether any surgeon is seriously making such a claim.

I am, Sir, yours faithfully,

London, W.1. T. IZOD BENNETT.

THE G.P. AND THE VOLUNTARY HOSPITAL

SIR,—The questions raised in Dr. C. M. Craig's excellent letter of Feb. 24, though obviously of greater urgency to urban than to rural practitioners, merit wide-spread consideration. If, in fact, a state medical service were to turn general practitioners willy-nilly into mere casualty officers it would be a major disaster; but, as with the national health insurance system, much depends on the individual general practitioner. In rural N.H.I. practice by no means all cases of "serious illness" are referred to specialists. Many are treated in their own homes and others are admitted to cottage hospitals, staffed by general practitioners on the lines envisaged by Dr. Craig. Only those comparatively rare cases which are beyond the scope or skill of the general practitioner are referred to the general hospitals, and of these cases the vast majority attend merely for special investigations or for a consultant's opinion, returning forthwith for treatment by their own doctors. Nor is there difficulty of access to such cases as are admitted to the general hospitals as inpatients. General practitioners are welcome to go in and see their patients and even to discuss diagnosis and treatment with the consultant in charge of the case. Is there any reason to suppose that, under a state medical service, this desirable state of affairs would cease to exist? On the other hand, I am at a loss to understand why "failure to provide for chronic and incurable illness" should be regarded as a defect in the voluntary hospital system. Institutional treatment of another kind is already provided for such cases and if this is insufficiently used it is partly because the relations of these patients often have a rooted objection to "putting them away." The medical care of these cases is undoubtedly a drudgery to some doctors, but others, more blessed, appear to have unlimited sympathy for their "chronics" and can visit them regularly for years without becoming "spiritually depressed." Again, much depends on the general practitioner. As to economic depression, this is surely of minor importance. Few, if any, of us are at present living below or even on the line of genuine poverty, nor are we likely to suffer more than the rest of the community in the present circumstances. If we are uncomfortably hard-up we must blame ourselves for extravagance and bad management; if we want to become rich we ought not to be general practitioners, or indeed doctors at all.

I am, Sir, yours faithfully,

Crediton, Devon. L. N. JACKSON.

"CONSTRUCTIVE CRITICISM"

SIR,—I have no desire to enter into any controversy about the future of clinical teaching, but Professor Ryle's appeal for "constructive criticism" in your issue of March 2 raises a larger question upon which I should like to submit a conservative point of view. This plea for "constructive" criticism has become a parrot cry. It is uttered with pompous sonority at committees by speakers who have never considered what they mean by it, but know it to have an impressive sound. Sooner or later it makes its appearance in every controversy where change is advocated. It is time it was debunked.

Though Lewis Carroll does not say so, I have no doubt whatever that when, realising their impending fate, the assembled oysters complained that they did not want to be eaten, those two breezy reformers, the walrus and the carpenter, countered by asking their prospective victims for more constructive criticism. Of late the consultant teacher of clinical medicine has become an oyster threatened with deglutition by a host of avid walruses and amateur carpenters, and when he protests they ask him, without a blush, to be more "constructive," as though it were morally incumbent upon him either to accept quietly whatever fate they intend for him, or his duty to justify his existence whenever some exponent of change chooses to hold him up at the controversial pistol point.

The specious demand for "constructive" criticism seems to serve a double purpose. It protects the airy theorist and the exponent of change from that critical analysis of their proposals they have so much reason to fear, and it is designed to force the critic to formulate alternative proposals for change though, rightly or wrongly, he sees no need for change. To make the demand appear plausible, constructive criticism—which is but a euphemism for more speculation—is endowed with wholly imaginary virtues, while conservative criticism—which is real criticism—is written down as in some unexplained way not respectable.

Yet the conservative critic is wholly within his rights in maintaining, with Falkland, that "when it is not necessary to change, it is necessary not to change," and he is under no logical or moral obligation to formulate alternative proposals for a change that in his judgment appears undesirable. At best, then, the plea for constructive criticism is mere muddle-headedness, while at its worst it is a sort of intellectual confidence trick designed to stall off criticism. It is incredible that so many should continue to be hoodwinked by it.

I am, Sir, yours faithfully,

London, W.1. F. M. R. WALSHE.

HEMIPLEGIA COMPLICATING HYDANTOINATE THERAPY

SIR,—In your issue of Feb. 10 I described a case under the above heading. In the following issue Dr. Tylor Fox, instancing unaccountable exacerbations of fits as common incidents among chronic epileptics treated by the usual methods, doubts my contention that the hemiplegia was either directly or indirectly due to Epanutin. Among chronic epileptics I have come across an occasional case of the exacerbations Dr. Tylor Fox describes, one of which had a transient paralysis. Since the introduction of epanutin, however, out of about 50 cases treated I have had 4 with the following history. All were chronic epileptics having approximately three or four major fits a month on previous medications. After transference to epanutin as the sole anticonvulsant each had a period of complete freedom from fits lasting three to six months. There then occurred in each case an acute exacerbation of between ten and twenty fits in 24 hours, no such exacerbation having taken place in any of them over many years previous observation. It was noted that an increase of the dosage of epanutin always caused an increase in the frequency of fits, while withholding it led to their cessation. In no case was this more clearly demonstrated than in the one who became hemiplegic.

By itself the exacerbation in the hemiplegic case might have been a chance happening, but the 3 other cases with a similar history of a long period free from fits eventually terminating in an exacerbation makes the association in my opinion almost certain. The relationship of the transient hemiplegia to this increase of fits is substantiated by the frequency of such a combination in epilepties treated by other means, as remarked on by Dr. Tylor Fox. Moreover, from a common-sense point of view such a thing should not be unexpected. Anticonvulsants are only empirical and do not remove the fundamental cause of the epileptic fits. Surely it is not surprising that in some cases an acute outburst should follow what is apparently a rise of the threshold for convulsive discharge.

This is only one of the numerous toxic complications of epanutin that I have seen, but I have also treated many cases who have benefited very definitely without any complications. I would like to emphasise strongly that it is not my wish to discourage its use; rather would I advocate its more frequent trial, with the proviso that those using it are thoroughly acquainted with its possible complications and the appropriate way of dealing with them. This consists of temporary or permanent withdrawal of the drug, and not of increasing it as was done in the case of hemiplegia I wrote about. The rapidity with which the toxic symptoms clear up after the suspension of the drug more than compensates for their frequency and severity, so that even such a possibility as hemiplegia need not deter us from using it.

I am, Sir, yours faithfully,

Cane Hill Hospital, Coulsdon, Surrey. DONALD BLAIR.

PULMONARY EMBOLECTOMY

SIR,—There are a few points in Professor Henry's article in your issue of Feb. 24 on which further emphasis may be laid. I, too, have been fortunate enough to be able to attempt 3 pulmonary embolectomies at the Liverpool Royal Infirmary, and the experience gained thereby may be of value in supplementing the suggestions he puts forward for improving upon Trendelenburg's technique. None of the three cases survived, although one of them who was moribund recovered enough to maintain a good pulse and to breathe for half an hour, when life suddenly ceased. Success appears to depend on timing intervention rightly, as the most common type of fatal embolism dies within 10–15 minutes, and a minute's delay may decide between success and failure. The operation in my three cases was done in the patient's bed and started within 10 minutes of the onset of symptoms, just as consciousness was lost. Each operation took about 2 minutes, but I gained the impression each time that I was a minute or two too late, and that operation might have been successful if started while the patient was still conscious. In most cases there is no time to perform any efficient local block, and although it may seem brutal to operate on a partly conscious patient without anæsthesia I doubt if he would have any remembrance of the operation should he recover.

I agree that removal of the second rib and costal cartilage gives adequate exposure; many accounts of

the operation suggest the removal of a portion of two or even three ribs, a time-consuming and unnecessary procedure.

The next difficulty which Professor Henry mentions, which to me has been a very real one, is to decide in the excitement of the moment the identity of the two large vessels arising from the heart. A pulmonary artery filled with clot feels just as firm as the aorta, and the rotation of the structures by the tourniquet somewhat alters their anatomical position. By running the fingers up the two vessels, however, one may feel through the apex of the pericardium the division of the pulmonary artery into two branches. I have not used the sucker for extracting the clot, as in these three cases there was not time to assemble any apparatus, but in the type of case where there may be a number of small clots and in which the course may be slow, it should be useful. Trendelenburg's clot forceps remove the larger clots satisfactorily, and judging by the diameter of the clots I have removed I should say that any smaller hole in the pulmonary artery than that necessary to introduce the forceps would render the operation more difficult and increase the chances of the clot breaking.

The fascinating methods of restoring cardiac rhythm suggested by Professor Henry should be of the greatest value, providing time is available. Only cardiac massage and adrenaline injections were tried in my cases. Artificial respiration deserves emphasis. Provided that the clots have been removed, rhythmical cardiac massage will keep the blood moving and the most effective cardiac stimulant is fully oxygenated blood flowing through the coronary arteries. Artificial respiration is best maintained by Auer and Meltzer's intratracheal insufflator, introduced into this country by Sir Robert Kelly, a machine that will maintain respiration even though both sides of the chest are widely open. The intratracheal catheter can be inserted in a few seconds down to the bifurcation by means of the laryngoscope; it should be put in as soon as the patient has lost consciousness. I have seen this apparatus maintain life in a number of cases of acute failure of the respiratory centre; it is an important addition to our armamentarium.

Experience of these three cases, although none was successful, has convinced me that the operation is worth doing and that one day a life will be saved.

I am, Sir, yours faithfully,

F. RONALD EDWARDS.

Dept. of Surgery, University of Liverpool.

CONTROL OF CEREBROSPINAL FEVER

SIR,—Your leading article of March 2 calls attention to the risk of old-fashioned medical methods. Might I relate my personal experience? I joined the service in time to see something of this winter's epidemics of "common colds," rubella, and some cases of meningitis. (Influenza is termed common cold, a *lucus a non lucendo* which avoids the complication of notification). In the hospital to which I was drafted the men are nursed in long wards which contain about 40 beds, and which are quite unsubdivided. The interval between the beds may be as little as three feet, and no masks are worn by sick-berth attendants. Smoking is allowed at certain times; inefficient blackout arrangements make it necessary to keep the windows shut after dark; there is no alternative system of ventilation, and the general fug can be imagined. Into the wards are introduced afebrile cases, and men with temperatures up to 104° F. Day after day fresh cases arrive and there is no attempt at segregation.

Supposing we wanted to imitate one of Topley's mice experiments with a human population is there anything more (short of spraying the air with organisms) which we could do to increase the severity of the epidemic? The authorities are having a good try. We swab throats, treat the carriers of hæmolytic streptococci to the depressant effects of chemotherapeusis, and then keep them additional days in the wards to infect new arrivals. Sick leave, change of air and change of diet are refused. Presumably the combination of post-influenzal depression, psychological depression and chemotherapeutic depression helps to maintain a vigorous growth of secondary bacterial invaders, so that when the patients are returned to duty a fresh crop of cases is almost certain to occur.

In this epidemiological blunderland a medical officer assists at two rites. He sacrifices his professional common sense by insisting on expensive and useless throat-swab cultures. He sacrifices professional integrity because when at last disaster occurs and the patient dies or is invalided out of the service he signs a form to say that the outcome was not the result of the conditions of service.

I am, Sir, yours faithfully,

PUZZLED.

100 CASES OF CEREBROSPINAL FEVER

SIR,—Since the beginning of this year over a hundred cases of cerebrospinal fever have been admitted to the City Isolation Hospital, Cardiff, and the following is a brief résumé of the first hundred cases. The ages ranged from 5 months to 70 years. Four cases under 12 months, twenty-eight aged 1–5 years, thirty-six aged 10–20 years, six over 50 years, with the remainder being fairly evenly distributed amongst the other age-groups.

There was a slight preponderance of females over males. All, except eight, were civilian cases. There were eight deaths. One case was a purely meningococcal septicæmia, the cerebrospinal fluid being normal and no changes in the nervous system being found post mortem, apart from slight meningeal congestion; a few c.cm. of blood taken during life and hæmolysed with diluted acetic acid showed gram-negative diplococci in a centrifugalised deposit. The cases generally were more severe than the sporadic cases in previous years, and the later more so than the earlier.

Treatment consisted of four tablets of M. & B. 693 by mouth on admission, repeated in 4 hours time, and then two tablets 4-hourly for 72 hours. Then, provided the sugar content of the cerebrospinal fluid was approaching normality, the dosage was reduced to one tablet 6-hourly for 24 hours, and then one tablet t.d.s. for a further three or four days. Children under 12 years received half the adult dosage, irrespective of the age of the child, as even infants appear to tolerate the drug quite well. Lumbar punctures were performed daily until the sugar content of the cerebrospinal fluid was satisfactory, and no case was considered out of danger if the sugar had not returned. If the patient was comatose the tablets were crushed and given in nasal feeds. If vomiting occurred after ingestion of M. & B. 693, or the patient was delirious and nasal feeding was difficult, the sodium salt of M. & B. 693 was given by intramuscular injections. In severe cases the sodium salt of M. & B. 693 was given intravenously in about ½–1 litre of normal saline by the Vacoliter drip method. It was generally unnecessary to cut down on a vein for this purpose. No serum was given intrathecally, but 30–60 c.cm. meningococcal antitoxin were given intravenously in the normal saline in severe cases. Fluids were pushed in all cases, as to my mind dehydration can contribute

materially towards the fatal issue, and two patients who ultimately recovered after being in coma for 5–7 days were given fluids by nasal feeds at 4-hourly intervals.

Owing to the fact that extensive hæmorrhages are not infrequently found in the adrenals, cortical extract was given in the fulminating cases intramuscularly. Salines were given rectally in severe toxic cases, and in a few instances, intravenously, as according to McCance in the Goulstonian lectures of 1936 sodium chloride is advocated in cases of adrenal damage. One child whose pulse was imperceptible on admission made a complete recovery when treated on these lines.

Petechiæ were present in about a third of the cases, facial herpes in about a third, and herpes as well as petechiæ in about a sixth of the cases. One case with extensive ecchymosis up to the size of a penny made a complete recovery. Complications were rare. Four cases developed arthritis, two iritis, three bilateral nerve deafness, and one orchitis. Complete recoveries from these complications were made upon renewal of large doses of M. & B. 693, with the exception of the cases of nerve deafness, which were, as usual in such cases, permanent.

Dr. Allison of the Ministry of Health Emergency Laboratory Service kindly arranged for the typing of the organisms, which were all found to be group I. Dr. J. M. Murphy and Dr. T. Thomas assisted me in the treatment of these cases, and Dr. Boissard carried out the post-mortem examinations.

I am, Sir, yours faithfully,

City Isolation Hospital, Canton, Cardiff. G. EMRYS HARRIES.

LUMBAR PUNCTURE IN CEREBROSPINAL FEVER

SIR,—The recommendation made in the Ministry of Health memorandum and in your special article of March 9 to administer sulphapyridine as soon as cerebrospinal fever is suspected is a wise one, but a small point to which we would draw attention is that the administration of the chemotherapeutic agent before a specimen of lumbar fluid is obtained may make it impossible to secure a culture of the infecting organism. This has occurred in a number of cases of coccal meningitis brought to our notice, organisms having been seen in direct smear or in a centrifuged deposit, but cultures proving sterile. In some of these cases the infection was undoubtedly meningococcal, while in others the pneumococcus or the hæmolytic streptococcus appeared to be the causative organism. While it is, of course, desirable to obtain a culture where possible, this consideration should not be allowed to postpone the administration of the chemotherapeutic agent as soon as the diagnosis is suspected, since the welfare of the patient is the primary consideration. As, however, it is not customary to perform lumbar puncture in these cases under domiciliary conditions, the fluid obtained after admission to hospital may fail to grow the infecting organism unless the patient is admitted to hospital within a short time. In epidemic cerebrospinal fever this will not, of course, be of much importance but we feel that it is a minor aspect of the subject which deserves to be noted.—We are, Sir, yours faithfully,

PHARMACEUTICAL SPECIALITIES (MAY AND BAKER) LTD.
Dagenham.

PARLIAMENT

ON THE FLOOR OF THE HOUSE

By MEDICUS M.P.

THERE has been an increase of activity on the medical front in the House of Commons during the last fortnight, a good example of which was the amendment to the air estimates moved by Commander Locker-Lampson. This amendment was arranged so that a discussion could take place on the medical side of Air Force affairs, and read as follows:—"This House, while gratified at the satisfactory health and comfort of the Royal Air Force personnel serving at home and overseas, recognises that the maintenance of a high standard of general fitness depends upon the continued operation of effective medical services, which must be encouraged and extended." Such a motion almost makes one believe that if the war went on long enough the nation and Parliament might become medical-science conscious. In the South African war neglect to apply scientific sanitary rules was a major cause of the epidemic of typhoid fever. In the war of 1914–18 such major epidemics were avoided in the fighting services but occurred in the civilian population at the end of and after the war. But in this war health, fitness, prevention of disease, diet and the medical services are a major consideration.

Commander Locker-Lampson put it that "there should be health as well as homes for heroes" and pleaded for the greater use of the Royal Society's register of scientists, which Sir William Bragg the other day complained was not being fully used. This led to a demand by Commander Locker-Lampson for the appointment of "a body of outside scientists" to study the diet of the troops, and he urged the addition of more milk to the airman's diet. Captain Balfour, the Under-Secretary of State for Air, in his reply was able to point to the Flying Personnel Research Committee, of which Sir Edward Mellanby is chairman. Interesting facts were also given about the minimum diet providing 4000 calories a day and about "due attention" paid to the place of "butter, margarine, green vegetables, liver and kidneys." Boys and aircraft apprentices receive half a pint of fresh milk a day and Captain Balfour said that the purchase of fresh milk locally, if it could be passed fit medically, was encouraged.

There is no doubt that diet is better in this war than before, but the Government still have a "sales resistance" to milk. It might be worth pondering on the fact that part of the Finnish army ration is one litre of milk a day—nearly four times the amount given to boys and aircraft apprentices.

* * *

Captain Balfour was also reassuring with regard to epidemics, saying that arrangements for influenza had been made in advance of its happening, and with regard to cerebrospinal fever that its incidence "is no greater than can be expected in peace-time," whereas the recovery results are "five times better than was usual in this country previous to the introduction of the new drug." But on two other points Captain Balfour was not equally happy. Captain Elliston had raised the question of strengthening medical organisation by appointing more women medical officers, about which some notes appeared in this commentary last week. Captain Balfour said that Captain Elliston was out of date. Unfortunately it is Captain Balfour who is out of date. And on the question of venereal disease little was said. Captain

Elliston pleaded for greater use to be made of the British Social Hygiene Council's public-instruction work. The Ministry of Health recommends the use of this organisation but will not help with payment. With the heavy financial burdens that all local authorities are now called on to bear it is not likely that many of them, and especially those in rural areas, will be willing or able to afford expenditure unless helped by special grants. And as Captain Elliston pointed out, the instruction given is even more helpful where the liability to infection is more serious, as in the Near East. Mr. Garro Jones made an important point in calling for greater attention to colds and "influenza" in its milder manifestations, which in the aggregate cause not only much ill health but the loss of a large number of days of efficient work. The Government were satisfied with the debate. The House and in particular the medical members would also be satisfied if they could be sure about Captain Balfour's claim that "any progressive step in medicine or surgery" is applied to the R.A.F. But the price of good government, as of liberty, is eternal vigilance. So the House will wait and see.

* * *

An important link between medicine and the Government was strengthened last week by a deputation of the Parliamentary Medical Committee which interviewed Mr. Oliver Stanley at the War Office. The subjects discussed were: (1) the employment of nurses in small Army medical units; (2) the prevention and treatment of nervous disorders in the Army; (3) women medical officers; (4) orthopædic treatment; and (5) the Army Dental Service. Mr. Stanley welcomed the deputation's approach to him as providing a most useful focus for opinion on medical issues in the House. It was suggested that the Parliamentary Medical Committee could act as a clearing house for complaints relating to medical conditions or treatment in the Army. The committee could ensure that indefinite reports were properly substantiated before investigation and that important matters were given first consideration. Mr. Stanley thought this procedure would be very helpful. Contact between members and ministers in this kind of way clears away misunderstandings and helps to make debates in the House more constructive. And if such contacts result in the better administration of medical services and in the more up-to-date use of advances in scientific knowledge the fighting services will have reason to be as satisfied as the ministers and the M.P.s.

FROM THE PRESS GALLERY

Children of School Age

Mr. KENNETH LINDSAY, parliamentary secretary to the Board of Education, in discussing the effects of war and evacuation on March 5, said that routine medical examination was being resumed in the schools and circulars had been sent to local authorities urging them to make good arrears in that respect. With regard to some of the main children's diseases—diphtheria, scarlet fever and infantile paralysis—they had been particularly fortunate in the last three or four months. This was partly due to the splendid autumn, partly to the closure of the schools in the great cities, partly to the double-shift system which on educational grounds had been condemned, and chiefly to the greater amount of open-air life. Only a few weeks ago it was discovered in Devonshire and Somerset that the London children had shown a striking immunity to influenza and other epidemics which had stricken the native children.

Mr. Creech Jones—Some children are better fed.
Mr. Lindsay—That is much too large a generalisation.
Mr. Creech Jones—No, it is not.

Dr. HADEN GUEST said they knew from the report of the medical officer of the Board of Education that about 10 per cent. of the children of the country were on a standard of nutrition that was below normal. The figure in the latest report available was 11·3 per cent. It was nonsensical to talk about physical fitness and to maintain a physical-fitness campaign if there was not the foundation of fitness, which was proper nutrition. The most economical and from the public-health point of view the wisest course would be to supply in every school midday meals for the children, which would secure that in any case they received adequate food. In present conditions it was not possible to supply the two pints of milk which theoretically it was desirable that each child should have every day, but it would be a wise thing if every child were given an opportunity at school of having one pint a day irrespective of the financial position of the parents. He was glad that medical inspection was to be resumed. He hoped this would include medical treatment of the defects found, and that it would extend to all areas of the country, including the reception areas. There he had found that medical inspection and the treatment of defects was in a very unsatisfactory state, owing to the fact that large numbers of the medical and nursing staffs were locked up in the evacuation areas and not doing any particular work. Greater attention should be paid to the extension and universal application of communal meals. Without these there were bound to be failures in nutrition in the reception and evacuation areas.

Sir FRANCIS FREMANTLE said that in the countryside the medical services were being over-pressed, and they varied in efficiency. There was no question that there had been a remarkable improvement in the health of the children generally. Instead of living in the close atmosphere of the towns, where the air was vitiated by fog and smoke and the children had indirect light across the narrow streets, they went to the country and lived in the clear air. They had also much better food and sufficient exercise. He urged that the children could not go on being billeted as they were now. There would have to be a great extension of school buildings in the form of camps and so on, and probably more permanent buildings. He thought that on the whole it was an advantage for children to be separated from their parents.

Mr. LINDSAY, in his reply, said it was not true that the whole of the medical services and the provision of school meals had been discontinued, as some newspapers and some speeches seemed to indicate. They had to build the medical services round an institute—the school—unless they changed the whole form of them. If the school was not being used and it was not possible for the children to attend the medical services could not function. The difficulty was that we had to provide a medical service in London and also to get doctors for the reception areas. Now the whole of the routine medical examinations were going on, and in 50 out of 150 areas there had been acceptance of the system of communal meals. At the moment, the consumption of milk was about two-thirds of what it was last year, and that figure was rapidly improving. The reason why it was only two-thirds was the difficulty of transferring money from evacuation to reception areas. The system of the supply of milk did temporarily break down, but he did not think it was now too bad.

Medical Care of the Royal Air Force

The health services and needs of the Royal Air Force were discussed in the House of Commons on March 7 on the air estimates. During the debate, Cmdr. O. LOCKER-LAMPSON suggested that what lost Germany the last war was the health, or rather the unhealth, of her people. It was not that our blockade deprived Germany of fats. It was that the Germans calculated food values exclusively in terms of calories. They refused to believe in certain other new subtle substances that English professors were discovering. It was a self-imposed blockade far more deadly than

that imposed by the Allies. The Royal Society had recently compiled a register of 1200 eminent scientists, but he was sorry to hear that it was being sparingly used by the Government. He invited the Secretary of State to appoint a body of scientists to study the diet of the troops. The medical side of the Royal Air Force was complex, for they suffered from illnesses unknown to other forces. They had to face such problems as the pull of gravity during power dives, night blindness, and fatigue at high altitudes. The most essential of any single food that airmen needed was what they called "cow juice." A pint of German beer brewed from the Munich Brown House which he had purchased contained no proteins, no fats, and not a single vitamin. English milk was a food by itself. Hitler had taunted our airmen as being milksops. But this was a war of well-being, and our slogan might be "March upon Milk" and our motto "Vitamins for Victory."

Sir MURRAY SUETER emphasised the need for preventing young pilots from becoming overstressed. The services of a large number of young doctors should be obtained, and they should be properly trained by men who understood this prevention. There were not many who did. These young doctors when trained, should mix with the flying personnel and if they saw any youngster showing the slightest sign of distress they should have him sent on leave or give him new surroundings. He suggested that an aftercare health board should be set up to look after those cases, of which there would be many at the end of the war, of pilots suffering from the effects of crashes, enemy action or neurosis.

Captain ELLISTON referred to the disappointment of medical women that so far they had been given little or no share of the Air Force Medical Services, especially in connexion with the Auxiliary Service. It was contended that women medical officers were especially fit to advise and look after the young girls serving in the Auxiliary Forces. When they were ill or run down and required attention it would be a great advantage if experienced women medical officers were available to look after them. Above all, he urged the Under-Secretary to recognise how desirable it was that a senior woman medical officer should have the supervision of all these Auxiliary Services. We were definitely approaching a shortage of men medical officers. Already there were parts of the country where there were not enough private medical practitioners to look after the needs of the civil population, and it would be a pity not to make use of our 6000 women medical practitioners. There were many hospital duties which they could perform well, for example, as bacteriologists, radiologists, pathologists or anæsthetists, and it seemed unreasonable that they should be excluded from doing their part in winning the war. Another matter was the important work to be done in the prevention of disease. One source of ill health common to military forces was venereal disease, and, happily, the Air Force, in this respect, had an uncommonly good record. The incidence of venereal disease was governed very much by civilian conditions surrounding camps and munition works, and he asked the Under-Secretary whether they had taken account of the dangers to which some of our airmen were exposed in stations around London, in the Home Counties and in our industrial areas. The Ministry of Health should not be content with a polite circular telling local authorities what they could do with their block grant, which was already earmarked over and over again for essential services, but should provide an additional grant for this essential war service. Great success had been achieved in reducing the incidence of this disease. In the last war 400,000 men were infected, meaning a serious loss of fighting strength. The incidence had been greatly reduced, and was being reduced, almost entirely by education. Instruction in the Royal Air Force was being given admirably by medical officers, but the Ministry of Health realised that we must do something more. The Ministry of Health Circular recommended the resources of the British Social Hygiene Council for the important work of public instruction in regard to this disease. This required highly trained teachers who were able to illustrate their lectures with the instructive films which had been prepared by the council. But once again the Ministry regretted that they could not make any financial contribution towards this work, although they suggested that local authorities should use the council. They left the council to spend their time collecting funds for work directly affecting this urgent matter. He suggested that the Air Force should make use of these trained teachers and that they should show their films in the aerodromes and training establishments. The occurrence of infection, even in the Air Force, where it was at such a satisfactory figure, varied largely in different stations, and the incidence became heavy in Malta, the Middle East, and the Far East, where disease was rife. These young fellows should be prepared not only for the dangers they encountered here but for the dangers they would encounter on foreign service.

Sir ERNEST GRAHAM LITTLE said that the rations in the last war in this country were laid down on the advice of a committee of the Royal Society, and the work was done so well that we had by far the best ration system of any of the belligerents. Close observation of the early symptoms of disease could not be carried out without adequate personnel. There was a serious lack of doctors at the moment, and the R.A.M.C. was some 1000 short. He knew of a young sergeant in the Air Force who had a severe attack of influenza. He was seen by the medical officer who told him to go to bed in a dormitory which he shared with six or seven others. For two nights he had a temperature of 103° F. He was seen by nobody, had no nursing, and was served with food by his own friends. The only instruction he received from the medical officer was that he should go to bed and report again two days later. Fortunately he was a man of some character and refused to walk through snow at 8 A.M. with a temperature of 103° F. The medical officer was not to blame; he was overworked and had not enough personnel to assist him. But circumstances like that were serious and should be looked into urgently. Cerebrospinal fever was assuming the character of a severe epidemic. If it extended to closely inhabited quarters, such as were found in many R.A.F. stations, appalling results might follow. All the prognostications were that a similar epidemic of influenza as followed the last war might come in the wake of this. If there was not an adequate medical service, in the event of an epidemic of either of these types the reaction in the country would be very serious.

Captain BALFOUR, Under-Secretary of State for Air, said that in the sphere of physical fitness the R.A.F. had nothing to concede to the enemy. There was no progressive step in medicine or surgery during recent years that had not been applied to the R.A.F. medical service. Since the war began the service had been greatly expanded, and there had also been an increase in the nursing and dental services. Captain Elliston's information was out of date, otherwise he would know that a considerable number of women doctors were employed to look after the W.R.A.F., and that women were also employed as sick-quarters attendants and in the dental surgeries. The Flying Personnel Research Committee, of which Sir Edward Mellanby was chairman, dealt with research into the medical aspects of all matters conducing to safety and efficiency in flying. Two lines of research were particularly necessary—physiological, on the working of the human body, and psychological, into the reactions of the mind. Parallel with the development of new aircraft was the problem of making the human body capable of piloting them. The human frame could stand any speed as long as it was in the horizontal plane; only when it was deflected to turn, climb or dive did medical problems arise. The Flying Personnel Committee had to look into problems of altitude, speed and other factors connected with modern aircraft. The R.A.F. hospital service at home and

abroad was complete and well-equipped. There was a special system of diagnosing and looking after the treatment of flying personnel who became fatigued or stale through war causes. They were giving special attention to preventive measures such as hygiene, diet, housing, sports and games, and by this policy had reduced considerably loss of efficiency through sickness and fatigue. The influenza epidemic which spread through the country after Christmas was anticipated by their medical service and arrangements for prevention and treatment made in advance. These measures included an expectation of cerebro-spinal meningitis, and the incidence in the Air Force was no greater than could be expected under the more favourable conditions of peace-time. The recovery results had been five times greater than was usual in the country previous to the introduction of the new drug. Stocks of this drug were laid in at all stations before the epidemic started. There had recently been appointed at the Air Ministry a Director of Hygiene with representatives of the various commands to watch hygiene, sanitation and diet.

QUESTION TIME

Allocation of Hospital Beds

Miss ELEANOR RATHBONE asked the Minister of Health whether he was aware that a private soldier was sent, on the night of Sunday, Jan. 28, to a hospital in Hastings where he was refused admission on the ground that beds must be kept for air-raid cases; that he returned home on foot and by omnibus through the snow, and was sent next day to the Buchanan Hospital, Hastings, where he died within three days from pneumonia; and whether a further direction would be given to hospitals in Hastings that cases of illness should not be rejected for the sake of keeping empty beds.—Mr. WALTER ELLIOT said: I have had inquiries made at the three hospitals at Hastings where beds are provided for air-raid casualties and can find no evidence that a soldier was refused admission. I am assured that the hospitals fully understand that they should not refuse admission to anyone requiring inpatient treatment in order to keep beds empty for possible air-raid casualties. I do not think, therefore, that any further direction to the hospitals is required.

Miss RATHBONE: Are we to understand that hospitals are not required to keep a proportion of their beds empty? Seeing that the enormous supply of beds of civilian people, prewar, was not in excess of the demand, is it not evident that the hospitals have an obligation to keep a certain proportion of their beds empty for necessary cases?—Mr. ELLIOT: That is not so in any way. No hospital is required to keep any bed empty for air-raid casualties if it is required for urgent cases, civil or military, especially military, and furthermore, extra accommodation is being arranged for by beds which are being added to existing accommodation.

Inspection of Billets

Mr. JOHN MORGAN asked the Minister if any inspectors were available to pay visits to reception areas or homes where there was reason to believe evacuated children were in unsatisfactory conditions.—Mr. ELLIOT replied: The local authorities in the reception areas are primarily responsible for ensuring through their billeting officers and local welfare committees that children are not billeted in unsatisfactory conditions. Local authorities have been asked from the inception of the evacuation scheme to arrange for a visit to be made to each house in which unaccompanied children have been received during the first week following reception and thereafter so often as may be necessary. The officers of the regional staffs of my department are in constant personal touch with the different local authorities. If anyone has good reason at any time to bring to the notice of my department conditions which call for inquiry an immediate investigation will be made.

Medical Boards

Mr. A. DENVILLE asked the Minister of Labour if he would state the number of medical boards for the examination of recruits which had been appointed, and how many chairmen of such boards had experience in a similar capacity during any period of the past war.—Mr. ERNEST BROWN replied: The number of medical boards at present appointed is 164. It is the practice wherever possible to select as chairmen of medical boards practitioners with special experience of work of an analogous kind. I have no information as to the number of chairmen who acted in a similar capacity during the past war.

In answer to a further question Mr. BROWN said: Chairmen of medical boards are selected from practitioners of standing in the profession whose names are supplied by the British Medical Association to the medical officers of the Ministry of Health.

Mentally Unsound Soldiers

Mr. DUNCAN GRAHAM asked the Secretary of State for War if he would arrange for the discharge of men who were described as mentally unsound by reputable members of the medical profession.—Mr. OLIVER STANLEY said: Soldiers are discharged as being of unsound mind on the recommendation of an Army medical board normally consisting of a president, who is a senior member of the Royal Army Medical Corps, and two other members.

Health Officers and the R.A.M.C.

Mr. GEORGE STRAUSS asked Mr. Stanley whether, in view of the heavy responsibility devolving on medical officers of health should air attacks take place, he would free such officers who were on the reserve of the Royal Army Medical Corps from their obligation to serve with His Majesty's forces; and, in particular, would he free Dr. Thompson, the medical officer of health for the borough of Lambeth, from this obligation.—Mr. STANLEY said: At the request of the Minister of Health a number of medical officers of health were, at the beginning of the war, either released from their military obligations or granted a temporary postponement of their liability to recall to Army service. Among the latter was Major Thompson, and in his case a further period of postponement is now under consideration.

Tuberculosis on Tyneside

Mr. DAVID ADAMS asked the Minister of Health whether he was aware that it had recently been calculated that, whereas deaths from tuberculosis in 1913 were 28 per cent. higher on Tyneside than in the rest of the country, in 1937 they were 54 per cent. higher; that, although all districts had improved to some extent, the improvement had been uneven, indicating that certain districts required special attention; and what particular steps he proposed to take to protect these districts from a considerable rise in tuberculosis during the present war.—Mr. ELLIOT said: The death-rate from tuberculosis in the Tyneside area as a whole shows a decrease of 36 per cent. since 1913, but the decrease varies considerably in different districts and is less than the decrease for England and Wales which is 49 per cent. I am aware of the need for keeping a watch on the local position there and I have approved the continuation of the building scheme for a new sanatorium by the Poole Sanatorium joint board. This should be completed in twelve months and will add three hundred and fifteen beds to the accommodation available for the area. In drawing comparisons with experience in the last war it is fair to have in mind the great improvement in general living conditions and in the facilities now available for the treatment of tuberculosis.

Pasteurisation of Milk

Mr. DAVID ADAMS asked the Minister whether, in view of the additional duties placed upon local authorities due to war conditions and the consequent danger that the supervision of milk-supplies, in the matter of the inspection of farm premises, storage and handling of milk and the collecting and testing of samples, might be relaxed, he would take steps to secure the universal adoption of pasteurisation by the collection and treatment of all milk in central depôts, or at least of non-designated milk, thereby eliminating the danger to consumers of diseases from this latter source.—Mr. ELLIOT said: I do not contemplate the introduction in present circumstances of the legislation which would be necessary to effect this.

No Leprosy on "Altmark"

Mr. A. SLOAN asked the Secretary of State for Scotland if he could give an assurance that the leper found among the prisoners taken from the *Altmark* had been properly segregated; and that no expense would be spared to secure proper treatment.—Captain J. H. F. MCEWEN (parliamentary under-secretary) replied: I am informed that this patient was taken at once to hospital and properly isolated. The opinion of the experts who carried out a clinical examination and the standard tests is that he is suffering not from leprosy but from dermatitis. He is receiving all necessary treatment in hospital.

Medical Coördinating Committees

Mr. DENVILLE asked the Minister of Health, who had arranged for four or five war emergency committees based on the British Medical Association divisions in the county of Kent, whether he was aware that these committees were controlled by a committee hitherto unknown, and now called the Branch Coördinating Committee; what are the functions of this Branch Coördinating Committee; was it this coördinating committee, or the War Emergency Committee which disbursed the Government funds for the treatment of unaccompanied evacuated children; and was it proposed to make any change.—Mr. ELLIOT replied: I understand that in a number of areas, including the county of Kent, the Central Medical War Committee have arranged for the appointment of coördinating committees for the purpose of coördinating the war services of the local medical war committees, and that the fund for the remuneration of practitioners for the treatment of unaccompanied evacuated children is administered through the coördinating committee so appointed in Kent. I see no reason for suggesting any modification of the arrangement.

Quarters for A.T.S.

Brigadier-General CLIFTON BROWN asked the Secretary of State for War what competent military authority approved sleeping quarters for the Auxiliary Territorial Service girls billeted at Aldermaston, Berkshire; if he was aware that each volunteer was provided with only a bedboard, palliasse, bolster and blankets and only outside washing and lavatory accommodation; whether conditions had now been improved in the sick-room and adequate attention and nursing provided for those who were ill; and whether he would see that women welfare officers were appointed in each command to inspect the social conditions at isolated Auxiliary Territorial Service detachments and to report to their county welfare committees outside the purview of War Office regulations.—Mr. STANLEY replied: At Aldermaston, members of the A.T.S. sleep on hospital beds with mattresses, pillows, sheets and blankets. There is washing and lavatory accommodation indoors, as well as butted baths which have lately been erected. Special sick-quarters have been provided, and there is a resident medical officer and five Voluntary Aid Detachment members. Women welfare officers have been appointed in the Southern Command.

Medical News

University of Cambridge

Dr. W. L. Duckworth, Dr. A. N. Drury, Dr. L. B. Cole, Dr. R. A. McCance, and Mr. H. E. Tunnicliffe have been appointed members of the degree committee of the faculty of medicine until Jan. 31, 1942.

The title of the M.B. degree has been conferred on K. M. Cossens, Girton.

National University of Ireland

The degree of M.D. has been conferred on Prof. J. McGrath.

The following appointments have been made at University College, Dublin: Dr. Edward Keenan, lecturer in anatomy; Dr. F. Kane, lecturer in physiology; Dr. Peter Keogh, lecturer in otology and rhino-laryngology; Dr. John Geraghty, lecturer in radiology; and John Dunne, lecturer in mental diseases.

University of Sheffield

Prof. L. G. Parsons has been appointed an external examiner in medicine and a special examiner for the M.D. degree; and Mr. J. D. Cocker an external examiner in dental subjects.

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty held on March 4, with Mr. Roy Young, visitor, in the chair, Dr. A. R. Hunter, Cambuslang, was admitted to the fellowship.

Royal Free Hospital

Owing to the development of air-attacks off the north-east coast of Scotland, and as half the students of this school now at Aberdeen will, in any case, return to London to begin their clinical studies after Easter, the council have decided to bring back also the remaining 134 students who are working for the second medical examination. The 68 students now in residence at St. Andrews University working for the first medical examination in June are to remain there for next term. Unless air-attacks develop over London during the coming months, the council hope that the first medical course also may be continued in London from next October.

Beit Fellowship

An election to a junior Beit fellowship for medical research will be made in July. Further information will be found in our advertisement columns.

New Maternity Wards at Stockport

On March 7 new maternity wards which will accommodate 54 patients were opened in the grounds of the Stepping Hill Hospital at Stockport. The two-storied building has 26 beds on each floor. A semi-isolation unit is self-contained with its own labour and ancillary rooms, and an isolation unit of two beds is also provided separated from the main building. There is also an antenatal clinic adjacent to the new wards.

The New Wing at St. Dunstan's

Introduced by Sir Ian Fraser, the Minister of Pensions, Sir Walter Womersley, opened on March 8 the new operating-theatre wing at St. Dunstan's, Ovingdean, made possible by the generous gift of £7000 from Lord Nuffield. The original holiday and convalescent home stands on the Downs at Ovingdean at about the same distance from the sea as Roedean School. From inside the crowded lounge, even while speech-making was in progress, through the window could be heard the song of skylarks—surely an ideal setting for those whose loss of sight has quickened the sense of hearing.

St. Dunstans' is now equipped as a war hospital for the treatment of men and women casualties of the Navy, Army, Air Force and Auxiliary Forces. Serious eye cases and other incidental wounds will be dealt with at the hospital as an integral part of the organisation of St. Dunstan's. The greatest care has been taken in the planning and equipping of the new operating wing to allow work to be carried on should any of the services be interrupted by enemy action. The main building and retaining wall protect the wing from splinter risks. The north and west wall surfaces, rather more exposed, are protected by asbestos-covered steel sheeting. A layer of sandbags cover the roof as an additional protection against shrapnel. Short of a direct hit, it is claimed the new wing is practically 100 per cent. immune from serious damage. An emergency electrical service supplied by a battery is capable of carrying on at a three-hour rate of discharge. A complete air-conditioning plant has been installed, and though windows are provided to the dressing-rooms and corridor the operating-room block is entirely closed in, which removes the necessity for blacking-out and special protection from splinters for windows, or the equally disturbing factor of shadows from window light.

Corrigendum.—In Mr. F. W. G. Smith's paper in our issue of March 9 the reference to D. F. Moone should read: Moore, D. F. (1937) *Lancet*, **1**, 1225.

OBITUARY

RICHARD JAMES LYTHGOE

M.D. CAMB., D.SC. LOND.

THE untimely death of Dr. Richard Lythgoe is a tragedy not only to his relations and friends, but also to science. The experimental study of the special senses had been grievously neglected in England both by physiologists and psychologists; until comparatively recently our knowledge of visual phenomena, under different conditions of illumination and the like, was advanced mostly by physicists inspired by the problems of artificial lighting and unacquainted with the complicated anatomical and physiological facts which determine the neural and psychological responses. Lythgoe took up these problems at the outset of his work as a Beit research fellow, and was able, with encouragement from the Medical Research Council, to devote himself unremittingly to them to the end of his life. His paper (1929) on "The adaptation of the eye: its relation to the critical frequency of flicker," embodying the results of experiments conducted with the help of his future wife, Miss Katharine Tansley, D.Sc., revealed new facts in a domain already thoroughly exploited by physicists—facts heartily accepted by them owing to the care and accuracy of his physical measurements. The same accuracy and originality were displayed in his paper (1932) on "The measurement of visual acuity," also published by the Medical Research Council. Both these papers mark new stages in the history of the scientific investigation of visual capacity. During the last few years he had been engaged in collaboration with C. F. Goodeve and others in an investigation of the properties of visual purple and its decomposition products under the influence of light. They too reveal a stride forward in our knowledge. Whilst those who knew him personally mourn the loss of a modest and retiring searcher after truth, science loses an original thinker and expert craftsman who, had he lived longer, would have stimulated others to follow in his footsteps.

From a snapshot

C. L. E. writes: Lythgoe was one of that rare type of investigator—a craftsman of science—who took a real delight in the work he had undertaken, and whose reward was in the prosecution of the work itself and in the artistic satisfaction arising from a task that was as well and thoroughly finished as it could be. Of his own branch of physiological inquiry, the physiology of the special senses and particularly of vision, he had an unmatched knowledge. His experiments were planned with skill and executed with a zealous patience; their results were clear and unequivocal. The work on visual purple which recently occupied him, in collaboration especially with Dr. Goodeve of the department of chemistry, was a good instance of his resource in applying to physiological problems the latest knowledge in such abstruse subjects as photochemistry. This work, generously financed by the Rockefeller Foundation, had already given results of fundamental theoretical value, some of which happily has already been published. Some of his other work had important practical bearings. As joint secretary with Sir David Munro of the M.R.C.'s vision committee, he was in touch with many problems of industry and latterly with war problems where his sound common sense and balanced judgment, backed by his wide knowledge, were of special value. Although on more than one occasion he was pleased to receive the offer of a chair of physiology, he never allowed himself to be led away from the path of pure research into one in which that freedom would be sacrificed to academic and administrative responsibility. His friends regretted this reluctance, and advanced students who profited from his yearly courses of lectures on the physiology of vision must have shared their regret that his abilities as an exponent could not have found a wider range of expression. His service to physiology included editorial work for the *Journal of Physiology*, and various posts, such as that of joint secretary in the Physiological Society. All the work to which he put his hand was thoroughly and faithfully done. He was a modest, genial and thoroughly loyal colleague, and fourteen years' contact with him entitles me to say with some authority that he was without fault.

Dr. Lythgoe was born in 1896 and was educated at Mercers' School and Trinity College, Cambridge, serving with the R.G.A. 1915–18. After the war he studied medicine at University College Hospital, taking the Cambridge medical degree in 1924 and later the London D.Sc. In 1925 he was Sharpey scholar and from 1926–33 Beit memorial research fellow, being awarded the Carpenter medal in 1934. In 1931 he married Dr. Tansley. He died of acute bronchitis on Feb. 28 at Grove Cottage, Grantchester, and leaves his widow with a son and two daughters, the younger of whom was born last January.

HARRY CLIFTON BURGESS

M.D. MCGILL, F.R.C.S.C., F.A.C.S., F.R.C.O.G.

Dr. Harry Burgess died at the Royal Victoria Hospital, Montreal, on New Year's day in his 57th year. Though in failing health for some months, he continued to discharge his regular duties of teaching and of practice until a few days before the end. By his untimely death Canada loses one of its ablest obstetricians.

Born in Nova Scotia he gained many prizes as a medical student at McGill, qualifying in 1905 at the age of 22. He had an extensive grounding in general medicine and general surgery before beginning to train in his chosen specialty, first in Montreal and later at Johns Hopkins under Kelly, Whitridge Williams and Thomas Cullen. For two years he was superintendent and registrar at the Montreal Maternity Hospital, and then spent a year abroad, visiting British schools and those of Paris, Berlin and Vienna. Only thus, after many years of preparation, he settled finally in practice, was appointed to the staff of the Royal Victoria Hospital and became a junior teacher in his old school. Already he was regarded as a coming man, for when the American College of Surgeons was founded he was chosen as one of its charter fellows. At the outbreak of the last war Burgess enlisted with the third Canadian general hospital unit (McGill), becoming chief surgeon to No. 3 stationary hospital. During the battles of Messines and Paschendale he was in charge of No. 3 Canadian C.C.S. and finally he was transferred to the 12th Canadian general hospital at Bramshott. While generally recognised as a bold and skilful surgeon it was, oddly enough, in the domain of head

injuries and as a brain surgeon that he reached distinction.

In 1918 Burgess resumed his special practice in Montreal where he was to spend the remaining twenty-two years of his professional life. And this professional life was from the very first a fine achievement. Rapidly he became known as a skilled obstetrician and as a surgeon of sound judgment, and soon there were discovered in him the qualities of sympathy and understanding that make for the great physician. He was an able exponent, an effective speaker, dramatic gift and sense of humour placing him among the elect as a born teacher. No wonder his advance was rapid, bringing new strength to his department and added reputation to his school. In 1925 he was admitted to fellowship in the American Gynecological Society. In 1929 he was named a charter fellow of the Royal Canadian College, and in the following year he was in the first group of F.R.C.O.G.s. A prime mover in the organisation and management of his "travel club," he was a host in himself to its leading spirits. This gave him an international acquaintanceship, while annual visits to the larger clinics kept him well abreast of modern method, both of teaching and of practice. He was not a great reader, and his contributions to literature were short and few. His was essentially a clinical gift; from first to last he was a teacher, and a healer of the sick.

One generation of students after another passed through his hands, and to them all he was the fatherly and wise counsellor; they never forgot him. For many years the proceedings of their annual dinner, no matter what the programme, were punctuated by an insistent demand for a speech from Burgess. This was their yearly tribute, and he never failed them. It is in the minds of these men, and in the hearts of his grateful patients, that his memory will rest secure.

ALFRED GEORGE WELLS

M.R.C.S., L.S.A.

Dr. Wells, who died at Fulham on Feb. 13 at the age of 86, had been a public vaccinator in the borough for 58 years. In 1900 he was associated with E. C. Greenwood, A. E. Cope, G. A. Miskin and V. A. Jaynes in founding the Association of Public Vaccinators of England and Wales, of which Dr. C. J. Palmer of Mansfield is now the only surviving original council member. Dr. Wells served the association in various capacities, rarely missing a meeting of the council, and was its president at the time of his death. He was prominent in the negotiations of 1928 which led to the increase in the minimum fee for primary vaccination from 2*s*. 6*d*. to 5*s*. For many years he was consultant for Government-produced lymph. Dr. Wells qualified in 1878 from Guy's Hospital and practised in Fulham up to a few weeks before his death. He has two sons in the medical profession.

Dr. GUNTHER

Mr. Robert Theodore Gunther, LL.D., reader in the history of science at the University of Oxford, who died at South Stoke on March 9, was an all-round man of science. In 1893 he obtained a first-class in natural science at Oxford, and he continued his education as a student of botany, zoology, biology, geography and archæology. His knowledge of so many of its branches made him peculiarly fitted to describe the growth of the tree of knowledge, and the history of science became his life's work. In 1924 he was appointed first curator of the Lewis Evans collection which became the Oxford Museum for the History of Science in the old Ashmolean building, and from 1920 to 1937 the eleven volumes of his Early Science at Oxford were appearing. It was his knowledge of herbals and old instruments which brought him into closest touch with medicine and in 1936 he was a vice-president of the history of medicine section when the British Medical Association met at Oxford. In 1938 the Friends of the Old Ashmolean gratefully recognised his work for the museum when they included his arms in a window commemorating important gifts to it.

Dr. ANN FRANCES PIERCY EVANS, who died on March 6 at Sidcup, was the widow of Willmott Evans, F.R.C.S., who died in September, 1938, in his 80th year. Mrs. Evans was the daughter of the Rev. George Piercy, a pioneer Methodist missionary of Canton, China, and had a distinguished career at the London School of Medicine for Women, winning several gold medals and qualifying with double honours in 1893. She then became assistant anæsthetist and demonstrator of anatomy at the hospital, doing some outside work for the boarded-out children of Dr. Barnardo. After her marriage in 1895 she gave up practice but one of her daughters followed her at Hunter Street.

A CANADIAN PIONEER

THOMAS RODDICK was that sort of adventurous personality which has so often found its billet in Canada. Dr. H. E. McDermot has set down a plain tale of his full and useful life (Sir Thomas Roddick: His Work in Medicine and Public Life. Macmillan and Co. Pp. 160. 6*s*. 6*d*.) He tells the story of the medical arrangements for the Louis Reil rebellion, one of the many incidents in Canadian history with which we at home are unfamiliar. It was in that short campaign that Canada's army medical service was first organised with Thomas Roddick as its director. In the early days of the Montreal medical school Roddick played a similar pioneering rôle, and at the hospital he was the first to introduce the antiseptic system with the Listerian technique of those far-away days. Dr. McDermot gives us a vivid picture of the discomforts of the spray, with the soaked garments, the pungent taste and the occasional nephritis produced by so much carbolic acid in the atmosphere. At this stage in Roddick's career, and indeed for long afterwards, he seems to have been a great teacher, and we gather something of what he did in collaboration with George Ross and William Osler in the medical faculty at McGill. He was always attracted to administration and sometimes these duties interfered with his hospital work and private practice. In 1896 he was elected to the Dominion parliament and began what was to prove a long struggle for unifaction of the provinces in medical matters which only ended with the establishment of the Dominion Medical Council and federal registration in 1912. That was probably his most important work, though not nearly so picturesque as the part he played in the Louis Reil rebellion. Roddick died in 1926, and it is well that the story of his varied and interesting life should be available. But apart from the personality which it portrays the book presents a valuable chapter in Canadian medical history.

THE FOOD AND DRUGS ACT.—In the presidential address to the Society of Public Analysts on March 6 Prof. W. H. Roberts, F.I.C., said he doubted the wisdom of bringing the Food and Drugs Act of 1938 into operation on Oct. 1, 1939, the issue of regulations for different classes of foods, on which its value largely depended, having been indefinitely postponed. The rationing of meat would probably lead to increased consumption of other foods, such as sausages and cheese, and regulations governing the content of meat in sausages and of water in cheese (particularly processed cheese) would therefore become very necessary.

Medical Diary

Week beginning March 18

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1.

TUESDAY—*Pathology:* 4 P.M., Prof. Alexander Fleming, Dr. M. A. Falconer, and Prof. L. P. Garrod: The Effect of Antiseptics on Wounds.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

THURSDAY—8.15 P.M., Royal Army Medical College, Millbank, S.W.1., laboratory meeting.

UNIVERSITY COLLEGE HOSPITAL, W.C.1.

TUESDAY—5 P.M., Prof. H. P. Himsworth: Insulin Deficiency and Insulin Inefficiency. (Sydney Ringer lecture.)

EUGENICS SOCIETY

TUESDAY.—2.30 P.M., (rooms of the Linnean Society, Burlington House, Piccadilly, W.1.), Mrs. Dorothy Thurtle: Abortion—Right or Wrong?

BRITISH POSTGRADUATE MEDICAL SCHOOL, DUCANE ROAD, W.12.

WEDNESDAY.—11.30 A.M., clinico-pathological conference (medical). 3 P.M., clinico-pathological conference (surgical).

THURSDAY.—2 P.M., Dr. Duncan White: radiological conference.

DAILY.—10 A.M.–4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics, and operations.

1.30–2 P.M., post-mortem demonstration.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.1.

Brompton Hospital S.W.3. MON. and THURS., 5 P.M., M.R.C.P. course in chest diseases—Royal Cancer Hospital, Fulham Road, S.W.3, MON. to SAT. 9.30 A.M., F.R.C.S. (Final) course—West End Hospital for Nervous Diseases, Gloucester Gate, N.W.1, MON., 5.30 P.M., neurological surgery course.

Appointments

JOHNS, A. W., M.R.C.S., D.P.H., medical officer of health for Merton and Morden.

MCGOWAN, R. MCG., M.B. Glasg., junior resident assistant medical officer at Walton Sanatorium, nr. Chesterfield.

PAGE, A. P. M., M.D. Lond., M.R.C.P., D.C.H., medical superintendent and physician at the City General Hospital, Leicester.

REID, R. G., M.B. Lond., F.R.C.S., assistant surgical registrar at the Royal Berks Hospital, Reading.

STEELE, G. D. F., M.B. Edin., medical officer, West Africa.

WALKER, R. N., M.D. Glasg., D.P.H., deputy medical officer of health for Oldham.

WINTER, RUTH, M.B. Glasg., medical officer in the maternity and child-welfare department, Birmingham.

London County Council.—The following appointments in the mental health service are announced:—

MARSHALL, J. K., D.M. Oxfd, D.P.H., first assistant medical officer at Banstead Hospital;

BATT, J. C., M.D. Bristol., M.R.C.P., D.P.H., temporary deputy medical superintendent at St. Ebba's Hospital.

TYABS, MARY, M.D. Lond., D.P.H., first assistant medical officer at St. Ebba's Hospital.

Examining Surgeons under the Factories Act, 1937: Dr. T. G. WILLIAMS (Harrow district, Middlesex) and Dr. H. MILLIGAN (Withnell district, Lancaster).

Vacancies

Bedford County Hosp.—H.S., at rate of £155. Also cas. O., at rate of £150.

Beit Memorial Fellowships for Medical Research.—Election of junior fellows, each £400.

Birmingham City, Dudley Road and Selly Oak Hospital.—Jun. M.O., at rate of £200.

Birmingham City, Hollymoor Emergency Hospital.—Jun. res. M.O., £200–£350.

Birmingham United Hosp.—Registrar to ear, nose, and throat dept., £350.

Bradford Royal Infirmary.—H.P. to radium and skin depts., £200.

Brighton, Royal Sussex County Hosp.—Mayo Fellowship in anæsthetics, £300. Also res. H.S.'s and res. cas. O.'s, at rate of £150 and £120 respectively.

Burton-on-Trent General Infirmary.—Cas. O. and H.P., £150.

Doncaster Royal Infirmary.—H.P., H.S., and H.S. to ear, nose, and throat and ophth. depts., each at rate of £150.

Dover, Royal Victoria Hosp.—Res. M.O., £140.

Durham County Council.—Temp. asst. M.O.H., £600.

Durham County Hosp.—Two H.S.'s, each at rate of £150.

Essex Administrative County.—Third asst. M.O. for Essex County Hosp., Broomfield, £350.

Exminster, Devon Mental Hosp.—Locum Tenens. £7 7*s.* per week.

Gloucester, Gloucestershire Royal Infirmary.—H.S. to ear, nose, and throat dept., £170.

Grimsby and District Hosp.—Res. orthopædic officer, at rate of £275.

Hastings, Royal East Sussex Hosp.—Sen. H.S., at rate of £165.

Haverfordwest, Pembroke County War Memorial Hosp.—Res. H.S., £200.

Hereford, Herefordshire General Hosp.—H.S. for cas. and ear, nose, and throat depts. and H.P., each £100.

Lancashire County Council.—Jun. res. M.O. for Lake Hosp. and Darnton House Institution, at rate of £225.

Leicester City General Hosp.—Res. M.O., at rate of £300.

Leicestershire County Council.—Jun. res. M.O. for County Sanatorium and Isolation Hosp., at rate of £300.

Lincoln County Hosp.—Sen. H.S., at rate of £250.

Macclesfield, Cheshire County Mental Hosp., Parkside.—Temp. asst. M.O., 7 guineas per week.

Manchester City.—Temp. res. asst. M.O. to tuberculosis wards for Withington Hosp., £350.

Manchester Ear Hosp., Grosvenor Square, All Saints'.—Res. H.S. and H.S., £120 and £150 respectively.

Manchester, Duchess of York Hosp. for Babies.—Sen. res. M.O., at rate of £125.

Manchester Royal Infirmary.—Technical asst. for clinical laboratory work, £200.

Manchester, St. Mary's Hospital.—Res. S.O. £250. Also Asst. res. S.O. at rate of £150.

Metropolitan Hosp., E.8.—Res. house officer, at rate of £150.

National Hosp., Queen Square, W.C.1.—H.P., £100.

Newcastle General Hospital.—H.P's and H.S's. Each at rate of £150.

Northampton General Hosp.—Res. anæsthetist and H.S. to ear, nose, and throat dept., each at rate of £150.

Nottingham General Hosp.—H.P., at rate of £150.

Oldham Royal Infirmary.—Res. surg. O., £400. Sen. H.S., at rate of £250. Also two H.S.'s, each at rate of £175.

Plymouth City.—Res. surg. O. for Mount Gold Orth. and Pulmonary Tuber. Hosp., £300.

Portsmouth City.—Jun. res. M.O. for Saint Mary's Hosp., £250.

Preston and County of Lancaster Queen Victoria Royal Infirmary. H.S., at rate of £150.

Reading, Royal Berkshire Hosp.—Emergency surg. O., £250.

Royal Cancer Hosp., Fulham Road, S.W.3.—Res. M.O., £200.

Royal Chest Hosp., City Road, E.C.1.—H.P., at rate of £200.

Salford City, Infectious Diseases Hospital.—Asst. res. M.O. £200.

Sheffield Children's Hospital.—H.P. at rate of £100.

Shrewsbury, Royal Salop Infirmary.—Res. H.S., at rate of £160.

Southampton, Free Eye Hosp.—H.S., at rate of £150.

South Middlesex and Richmond Joint Hosp. Board.—Deputy res. med. supt. for Board's hosp., £400.

Staffordshire County Council.—Second asst. bacteriologist and pathologist, £700. Also H.S. for Standon Hall Orthopædic Hosp., £200.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S., at rate of £150.

Sunderland Royal Infirmary.—Cas. O. and H.S. to ear, nose, and throat dept. and H.S., each at rate of £120.

Surrey County Council.—Asst. res. obstet. at Epsom County Hospital. £350.

Swansea General and Eye Hosp.—Res. anæsthetist, at rate of £150.

Walsall General Hosp.—Asst. hon. ophth. surgeon.

West End Hosp. for Nervous Diseases, Gloucester Gate, N.W.1.—Res. H.P., £125.

Western Ophthalmic Hosp., Marylebone Road, N.W.1.—Res. sen. and jun. H.S.'s, at rate of £150 and £100 respectively.

Wolverhampton Royal Hosp.—Cas. O., at rate of £100.

Births, Marriages and Deaths

BIRTHS

HARDMAN.—On March 10, at Blackheath, the wife of Surgeon Lieutenant G. L. Hardman, R.N.—a daughter.

HARVEY.—On Feb. 29, at Hong-Kong, the wife of Major W. G. Harvey, R.A.M.C.—a son.

LEISHMAN.—On March 7, at Harewood, Yorks, the wife of Major A. W. D. Leishman, R.A.M.C.—a daughter.

MARRIAGES

MACEWEN—COOPER.—On March 9, Alexander Campbell MacEwen, Lieutenant, R.A.M.C., to Eileen Phyllis Cooper.

DEATHS

ADSHEAD.—On March 11, in London, Geoffrey Palmer Adshead, M.B. Edin., Surgeon Captain R.N. (retd.), aged 57.

BRAITHWAITE.—On March 5, at Lymington, John Braithwaite, D.S.O., M.D. Durh.

DEARE.—On March 9, at Farnham, Surrey, Benjamin Hobbs Deare, C.I.E., M.R.C.S., Major-General I.M.S. (retd.).

EVANS.—On March 6, at Sidcup, Ann Frances Piercy Evans, M.B. Lond.

GABRIEL.—On March 11, at Broadstairs, William Maurice Gabriel, M.R.C.S., L.D.S., aged 77.

HAYDEN.—On March 8, at Hendon, Arthur Falconer Hayden, M.B. Lond., F.R.C.S., pathologist in the V.D. department, St. Mary's Hospital, Paddington.

HUSBAND.—On March 6, at Ripon, John Charles Radclyffe Husband, M.D. Durh., J.P., aged 82.

O'BRIEN.—On March 9, Arthur John Rushton O'Brien, C.M.G., M.C., M.B. Edin., B.Hy. Durh., M.R.C.P., chief medical adviser to the Colonial Office, aged 56.

REYNOLDS.—On March 4, Edward George Reynolds, M.B. Lond., Lieutenant, R.A.M.C.

RIDGE-JONES.—On Feb. 29, at Cawsand, near Plymouth, Ivor Ridge-Jones, M.C., M.R.C.S.

NOTES, COMMENTS AND ABSTRACTS

MIDWIFERY IN THE SOLOMON ISLANDS

Dr. Allen G. Rutter, medical superintendent of the Helena Goldie Hospital, Solomon Islands, sends us the following account of a case treated under difficult conditions.

A full-blooded Solomon Island woman, aged 30, was first seen at the antenatal clinic at the Helena Goldie Hospital in June, 1938, when she was about twenty-four weeks pregnant. She had had six previous pregnancies, of which the first five ended in normal labour and the sixth in a death in utero with spontaneous delivery. Only two of the five children survive, the first and the fourth. Examination at this time revealed no abnormality. Fœtal movements were observed, but the fœtal heart was not heard. The patient's blood-pressure was 115/70. She was told to report again in two months and returned to her village.

She did not report at the appointed time, and I next saw her on Oct. 24, when she had been ill for twenty-four hours with severe abdominal pain and vomiting. There was no history of vaginal bleeding. She appeared moderately collapsed, with rapid pulse and profuse sweating. She was so intolerant of examination that I suspected a hysterical element in her symptoms, especially since there had been a recent domestic quarrel. Her abdomen was tense, tender, and distended and could not be palpated satisfactorily. The uterus did not appear to be contracting, and the fœtal heart was audible, though with difficulty. The spleen reached half-way to the umbilicus and was tender. I administered a sedative and promised to return in two days.

On the 26th I was told that the pain had not ceased in the interval, and that there had been a moderate vaginal hæmorrhage on the 24th and another early that morning. Examination showed little change in the patient's general condition, but the fœtal heart was no longer audible. I transferred the patient to hospital, where vaginal examination revealed a soft cervix, which had not begun to dilate, and a slight oozing of dark blood. Temperature 101° F., pulse-rate 120. Red cells 1,500,000 per c.mm. and hæmoglobin 30 per cent.

I was then called to visit a patient 170 miles away, and the patient was left in the care of two qualified nurses, with instructions that Pituitrin should be administered if there was severe bleeding. I returned on Oct. 31. The patient was still febrile, but her general condition had improved, the pain was less, her abdomen was softer, and there had been no further bleeding. No fœtal parts were palpable. At the end of three weeks she was completely free from symptoms. Four weeks later pain, fever, and purulent vaginal discharge returned. She was given a blood-transfusion on Nov. 9 which raised her hæmoglobin from 45 to 68 per cent. Unsuccessful attempts were made to induce labour with quinine and castor oil on Nov. 14 and 18. By the 29th her temperature had completely settled; there was slight abdominal tenderness, the uterus was the same size, and the fœtal parts could be felt with difficulty. On Dec. 8 there was no pain or pyrexia, and she was discharged to out-patients where she was given eight injections of Theelin, 50 rat units daily, without result.

On Jan. 9, 1939, she was re-examined. She had no symptoms; the abdominal tumour was unchanged in size and consistence; vaginal examination revealed a small hard cervix, and it was difficult to be certain whether the abdominal tumour was the uterus or not; both lateral fornices were empty. On the 20th she was readmitted with abdominal pain, and a temperature of 100° F. She had had bright bleeding for two days, with some dark altered blood. Tumour as before, but very tender at the fundus; cervix hard and not dilated. On Feb. 18 the patient complained of more pain, radiating to the rectum, with severe pain on defæcation. On vaginal examination a large mass was palpable in the posterior fornix, fluctuating on pressure; it was also palpable per rectum. On the 21st the pain was worse. Under spinal anæsthesia a large soft mass in the posterior fornix, rendering the cervix almost inaccessible, was needled per vaginam, and only clear fluid containing moderate numbers of pus cells was obtained. Drainage was therefore not attempted. Protruding from the os was what appeared to be a piece of umbilical cord. Offensive pus could be expressed by pressure on the fundus. The os was dilated to Hegar 15 and a rubber tube inserted for the injection of glycerin into the uterus.

The pain was somewhat relieved by this dilatation, but on March 10 she was still febrile; on that day there was a sudden free discharge and the pain was much eased. On the 23rd the abdominal tumour was unchanged, but the vaginal mass had almost disappeared. Vaginal hysterotomy was performed under spinal anæsthesia, and the fœtus was removed piecemeal. All the fœtal bones except some of the hand and foot were removed, and some of these had been passed before operation. A rubber tube was left in the cervix. On the 27th there was a moderate hæmorrhage round the tube; free discharge through the tube. Hæmoglobin 40 per cent. Blood-transfusion 15 oz. performed. Two days later the vaginal discharge became frankly fæcal and remained so for five weeks. The patient lost weight until she weighed 4 st. Gradually the fistula, which appeared to be recto-uterine, closed and the patient regained weight. By May 15 the abdominal tumour had disappeared, and the bowels were moving normally. She was discharged on June 4, and on the 24th she weighed 5 st. 3 lb. and appeared to be in perfect health.

The ideal treatment for this patient, if immediate admission to hospital had been possible, would probably have been cæsarean section, but by the time treatment could be undertaken the moment for this had passed. My inclination was to perform an exploratory laparotomy in January, when all symptoms had disappeared, and to decide on treatment according to the findings at operation. This the patient refused. What precipitated the onset of infection I cannot say; but, once it had developed and a pelvic abscess had formed, cæsarean section was impracticable. After I had waited more than a reasonable time for the uterus to empty, the rather unorthodox procedure of vaginal hysterotomy appeared to be the only justifiable course. The operation was done by the usual technique, the uterus being opened longitudinally by an incision reaching well up into the body. The incision in the vaginal mucosa was closed without drainage at the end of the operation, and no trouble with parametric infection was experienced. Recovery undoubtedly dated from the operation, although convalescence was greatly prolonged by the development of a recto-uterine fistula, which I am inclined to attribute to ulceration by a fœtal bone rather than to the rubber tube. Transfusion of blood was certainly a life-saving measure.

A SIMPLE POSTURAL DRAINAGE BED

Dr. H. R. E. WALLIS has sent us the following suggestion from Cuckfield Emergency Hospital: Take one collapsing bed (THE LANCET, Jan. 27, 1940, p. 203), and allow both ends to collapse. The middle support remains and the bed is like an inverted V. This can be done while the bed is made up, and even with a patient in it. After use the bed can be restored to the level without having to be re-made. The whole scheme is cheap, comfortable and useful.

WAR-TIME EATING

To the keen cook war-time restrictions are but a challenge, and Miss Leonora Eyles is ready to help us to "Eat Well in War-time" (Victor Gollancz. 1940. Pp. 158. 3*s*. 6*d*.) with a cookery book off the conventional lines, written with great gusto and lots of common sense. The introduction, which dabbles in dietetics, is half sound, half unsound, but we recommend the cookery section to anyone interested in that art. Dr. W. H. White in his "Food in War-time" (G. Bell and Sons. 1940. Pp. 64. 6*d*.) offers to help with his vegetarian recipes. But why must he speak of lentil "roast," walnut "sausages" and butterbean "cutlets?" His soul should revolt at such carnivorous words, and we are horrified to discover that he adds Worcester sauce to his tomato sauce.

The crank dietitians chase round in circles, like waltzing mice, quoting all the other crank dietitians as proof of what they say. If they provide the war-time cook with little instruction at least they offer a little mild relief from Lord Haw Haw and the Zeesen charivari. Mr. Cyril Scott has alumino-phobia, and autointoxicationphobia with sundry astrological side-symptoms. He maintains in "Health, Diet and Common Sense" (Andrew Dakers. 1940. Pp. 192. 5*s*.) that the health of the country has deteriorated from the day of the introduction of the steel-roller process of flour-milling and that the primary cause of disease is faulty nutrition. He quotes as words of wisdom: "We must keep our mind on the objective—a healthy colon which will completely evacuate its contents and thus keep the system clean." It is a pity that so many writers of books on dietetics have their large intestines on their brains. Mr. Edgar Saxon as an amateur dietitian, psychologist, and physician has for long instructed the people of Great Britain in the art of living. In "Sensible Food for All" (C. W. Daniel Co. 1939. Pp. 135. 5*s*.) much that he says about our way of living is reasonable. But his love for the Indore process of making garden and field fertilisers sometimes leads him astray. He believes, for example, that all sugars in their oxidation stop at the oxalic-acid stage and have to be excreted as calcium oxalate. Oxaluria must be very common if this is true. In "Good Food from Healthy Soil" (Same publishers. Pp. 44. 1*s*.) he continues the flirtation with ars amatoria and the vegetable offspring. Of the beetroot he writes: "Its purple colour means that it contains carotine rich in vitamins, and also calcium."

When a professional man from another faculty ventures abroad one hopes for a real contribution from the guest artist. Prof. Thomas Johnson is a botanist who is interested in dietetics. But his "Inometer or Ladder Food Chart" (E. and S. Livingstone. 1939. Pp. 8. 6*d*.) is dominated by the calorie and his suggestions are unpractical. For instance, who would care to eat the porridge made from 2 oz. of oatmeal every day? And what should we say of the following sentence: "Those (proteins) derived from animals are called first class, because they are more readily and fully digested and absorbed than those of plant origin."

A FRENCH PSYCHIATRIST ON HITLER

DR. TOULOUSE, the French alienist, attempts a psychiatric dissection of Herr Hitler in *Concours Médicale* (Feb. 4, 1940, p. 153). He is, according to this authority, the product of his biological composition and of the milieu in which his activity has developed. He suffers from *arriération affective* which is in opposition to the purification of the instincts of egotism inherent in human nature. The outcome of this combination is a series of murders and refined persecutions of his adversaries. To begin with, he lived the life of a Bohemian vagabond, of an outlaw, of an unsuccessful artist. At the same time he possessed the qualities of a leader of men, and he knew how to speak to crowds and infuse them with his aggressive mysticism and intolerance. Paradoxically enough, this Austrian by birth glows with enthusiasm for the expansion of a country which is not his own; brachycephalic and brown-skinned, he extols the superiority of the blond dolichocephalic with whom he has nothing morphologically in common. Lacking elementary culture, he has no critical spirit, and in the course of his reading he has adopted at random certain Pan-Germanic doctrines. With no controlling force over him and rendered drunk by his popularity, his evolution is in the direction of intolerant megalomania, theomania, homicidal fury and morbid cruelty. His to do what he likes, even to the breaking of the pledged word. Whatever his qualities and shortcomings, he has led the German people out of the anarchy in which it had wallowed; and whether he be regarded as insane or half insane it cannot be denied that he is making history. Dr. Toulouse flirts with the retrospective idea of a world ordered with such psychiatric perfection that Herr Hitler would have been recognised as the psychiatric trouble-maker he is at the time when he was under lock and key.

A STEAM INHALER

MEDICATED steam inhalations are excellent treatment for many acute and subacute respiratory infections, but they are a little troublesome to prepare. In addition, the heat is soon dissipated and the treatment loses its maximum efficiency. Burgess Products Ltd., of Brookfield Road, Hinckley, Leicestershire, have tried to overcome these difficulties in their electrical vaporiser. It consists of a porcelain jar containing two wire filaments passing from two terminals at the top nearly to the bottom of the jar. The porcelain support of these filaments contains a cup-shaped space at the upper end for cotton-wool impregnated with the medicament. There is a porcelain cover, perforated for the passage of the steam, which carries a cable and adapter for A.C. mains. When the cover is fitted the filaments are put into the circuit which is completed by pouring tap water into the jar. The ions of salts in solution conduct the current, and if the water is too soft a little salt must be added. Immediately the circuit is completed steam is given off, and this continues until the water level falls below the lowest point reached by the wire filaments. It is a compact unit and the makers claim that it requires little attention, and that the running cost is small. It is perhaps no easier to assemble and start working than the homely method with a kettle and jar, but it has the advantage of maintaining its efficiency and keeping up a head of steam for a long time. In one test a good supply of steam was obtained for 40 minutes before the circuit was automatically cut out. The price is 15*s*.

MANCHESTER HOSPITALS BOARD

LAST year the work of the Manchester Joint Hospitals Advisory Board was necessarily bound up with the emergency hospital arrangements for the city. But it also approved recommendations for the creation of a panel of honorary advisers to the clinical services of the city which may well be of lasting importance. Two years ago honorary directors in medicine, surgery and gynæcology were appointed at the municipal hospitals for an experimental period. The worth of this scheme has now been proved, and it is suggested that the advisers should be attached to the board itself and cover all the hospitals in the city. It is also recommended that individual advisers should be replaced by an honorary advisory medical committee on which medicine, surgery, obstetrics and gynæcology, and orthopædics should be represented; later neurology and pædiatrics would be added. The function of the committee would be to advise on the organisation and coördination of services at different hospitals so that overlapping could be avoided. They would also encourage research and guide new departments. The proposal has now been submitted to the public health committee, the voluntary hospitals council and the boards of management of the various hospitals for their approval.